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NATIONAL DAM SAFETY PROGRAM. BASIC CREEK DAM (INVENTORY NUMBER --ETC(U)
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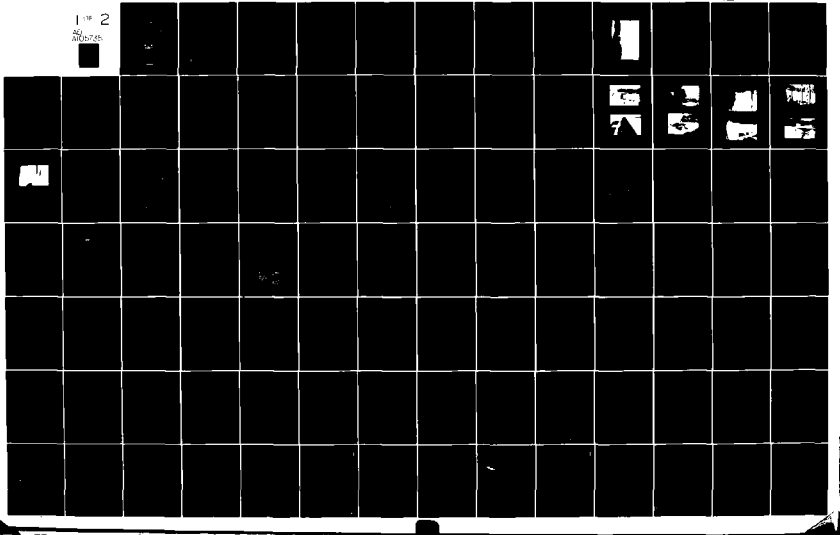

LEVEL II (8)

LOWER HUDSON RIVER BASIN

AD A105 535

BASIC CREEK DAM

ALBANY COUNTY, NEW YORK
INVENTORY NO. N.Y. 84

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM.

Basic Creek Dam (Inventory Number NY. 84),
Lower Hudson River Basin, Albany County,
New York. Phase I Inspection Report.

(15) DACW51-79-C-0001

(10) George /Koch

NEW YORK DISTRICT CORP OF ENGINEERS

(11) FEB 1981

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. **The examination of documents and visual inspection of Basic Creek Dam and appurtenant structures did not reveal conditions which constitute a hazard to human life or property. The discharge capacity of the spillway is inadequate for all storms in excess of 52% of the PMF (Probable Maximum**	

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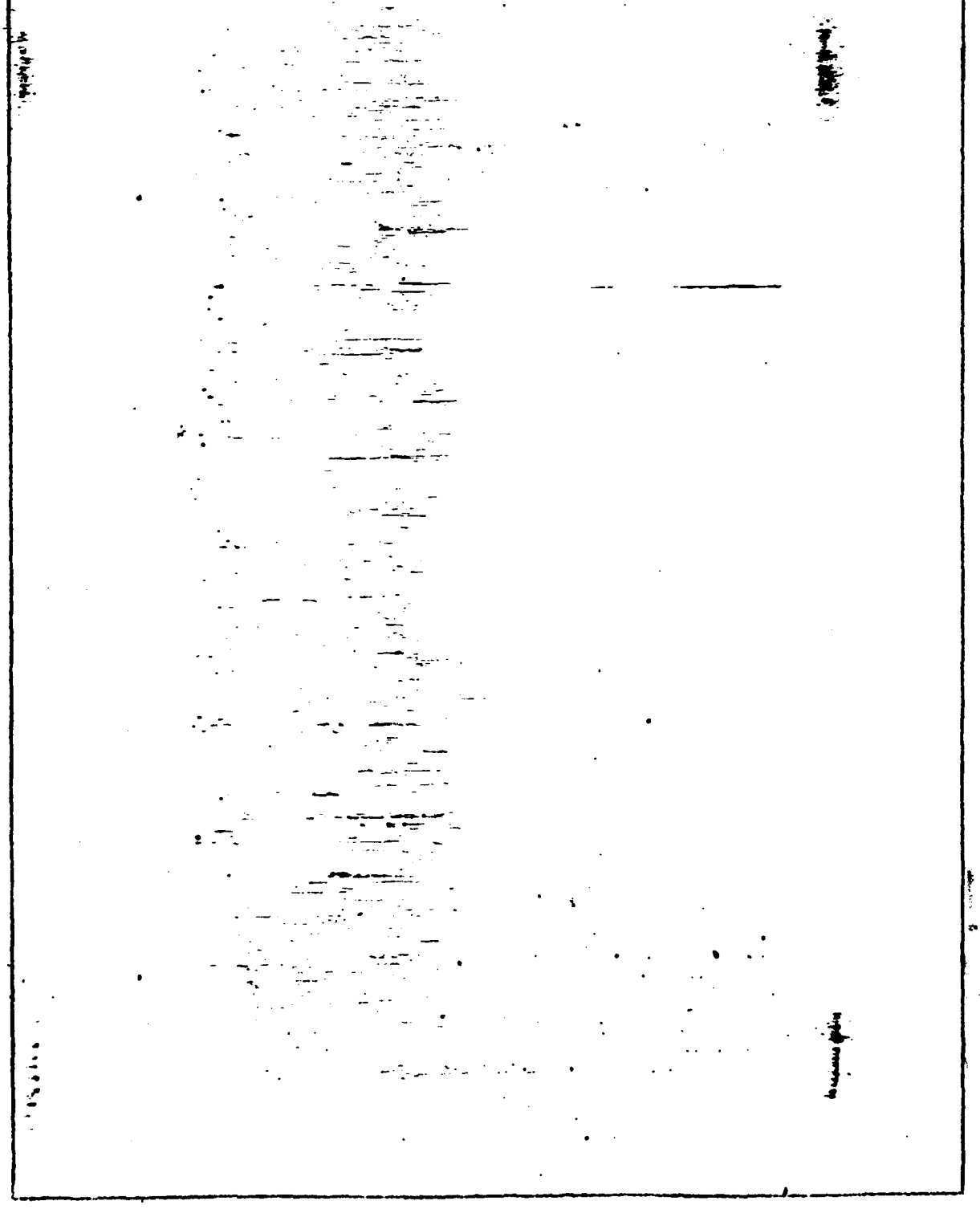
Flood). During the 1/2 PMF event the water surface will approximate the top of dam elevation and the outflow will be 6801 cfs. The spillway is, therefore, assessed as "inadequate".



PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
BASIC CREEK DAM I.D. No. NY 84
LOWER HUDSON RIVER BASIN
ALBANY COUNTY

TABLE OF CONTENTS

Phase I Inspection Report
National Dam Safety Program

Name of Dam:	Basic Creek Dam (I.D. No. NY 84)
State Located:	New York
County Located:	Albany
Stream:	Basic Creek (trib. of Catskill Ck & Lower Hudson River)
Date of inspection:	October 24, 1980

ASSESSMENT

The examination of documents and visual inspection of Basic Creek Dam and appurtenant structures did not reveal conditions which constitute a hazard to human life or property. The discharge capacity of the spillway is inadequate for all storms in excess of 52% of the PMF (Probable Maximum Flood). During the 1/2 PMF event the water surface will approximate the top of dam elevation and the outflow will be 6801 cfs. The spillway is, therefore, assessed as "inadequate".

The following problem areas were observed which require remedial action within 1 year of notification to the owner:

1. Repair the areas of deteriorated concrete which are leaking (approx. 50 gpm) between the 24 inch and 48 inch valves within the intake chamber.
2. Repair the deteriorated concrete and control the seepage within the diversion tunnel.
3. Monitor the seepage within the intake chamber, particularly above the 12 inch valve, and repair as required.
4. Repair the voids in the concrete spillway apron. Repair the construction joint material of the spillway and apron. Reinspect at least yearly and recaulk as necessary.
5. Monitor the seepage from the horizontal joints of the spillway. If seepage increases appreciably, investigate and repair.
6. Periodically monitor the concrete deterioration of the dam and appurtenances. Repair as required.
7. Periodically remove the debris in the downstream channel. Also remove the tree and brush growth to provide an unrestricted channel.
8. Remove the trees and brush on the slopes, crest and abutments of the embankments. Provide a program of periodic cutting and mowing of these surfaces.

9. Provide a program of periodic inspection and maintenance of the dam and appurtenances, including yearly operation and lubrication of all gates and valves. Document this information for future references. Also develop an emergency action plan for notification of downstream residents and the proper governmental authorities.

George Koch
Chief, Dam Safety Section
New York State Department
of Environmental Conservation
NY License No. 45937

Approved By:

Col. W. M. Smith, Jr.
New York District Engineer

Date: AUG 5 1981

Photo # 1.
BASIC CREEK DAM OVERVIEW.

Phase I Inspection Report
National Dam Safety Program
Basic Creek Dam I.D. No. NY 84
DEC #191-782 Lower Hudson River Basin
Albany County

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

Evaluation of the existing conditions of the subject dam to identify deficiencies and hazardous conditions, determine if they constitute hazards to human life and property and recommend measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

Basic Creek Dam consists of a 100 feet long concrete ogee spillway located near the left side of the dam, abutted by 2 homogenous earth embankments (left embankment = 134 feet, right embankment = 630 feet) with the maximum height of the dam above original ground surface being 21 feet. The upstream slopes of the embankment are 1 vertical: 3 horizontal, the downstream slopes are 1: 2.5, and the crest width is 15 feet. A berm was constructed at the toe of the downstream slopes at Elevation 930. The reservoir drain is located within the control building located at the right abutment of the spillway. An intake structure and diversion tunnel located northeast of the dam controls the flow to the Alcove Reservoir approximately 2 miles east of the dam.

b. Location

The dam is located on the Basic Creek, tributary to the Catskill Creek and the Lower Hudson River, within the Town of Westerlo, Albany County, New York.

c. Size

The dam is 21 feet high and impounds approximately 2200 acre-feet at apillway crest elevation. The dam is, therefore, classified as "intermediate" in size (1000 to 50,000 acre-feet).

d. Hazard Classification

The dam is classified as high hazard due to its location above the Village of South Westerlo.

e. Ownership
The dam is owned by the City of Albany, New York. The owner's representative is Mr. David F. Bruno, Commissioner, Department of Water and Water Supply, City of Albany, Quackenbush Square, Albany, NY 12207, telephone (518) 462-8661.

f. Purpose of the Dam
The dam impounds water for supply purposes to the City of Albany, NY.

g. Design and Construction History
The dam was constructed in 1928.

h. Normal Operating Procedures
Water Releases from Basic Creek Reservoir are normally passed over the spillway. When required, additional reservoir releases, through the intake structure and diversion tunnel, are provided to augment the storage capacity of Alcove Reservoir, which is located approximately 2 miles east of the dam.

1.3 PERTINENT DATA

a. Drainage Area (mi. 2)	19.46
b. Elevations (ft. USGS DATUM)	
Top of Dam	947.0
Spillway Crest	925.0
Invert Reservoir Drain	908.0
c. Reservoir (Acres; Acre ft.)	
Surface Area @ Top of Dam	320.
Surface Area @ Spillway Crest	265.
Storage @ Top of Dam	3922.
Storage @ Spillway Crest	2199.
d. Dam	
Type: Homogenous earth with concrete core wall	
Length: (ft.):	765.
Upstream Slope:	3:1
Downstream Slope:	2.5:1
Crest Width (ft.):	15.
e. Spillway	
Type: Uncontrolled concrete ogee.	
Weir Length (ft.)	99.
Capacity @ Top of Dam (cfs.)	6967.
f. Reservoir Drain	
3 1/2 x 5 feet gated sluice way through concrete ogee section.	
Maximum Capacity @ Top of Dam (cfs)	600 cfs.

SECTION 2: ENGINEERING DATA

2.1 GEOLOGY

The Basic Creek Reservoir Dam is located in the glaciated portion of the "Appalachian Uplands" physiographic province of New York State. This province (the Northern extreme of the Appalachina Plateau) was formed by the dissaction of the uplifted but flat lying sandstones and shales of the Lower and Middle Devonian Period (395 to 365 million years ago). The plateau surface is represented by flat-topped divides with drainage generally southward. Drainage in the vicinity of the dam is southward toward Catskill Creek.

Glacial cover is generally thin, the deposits of which have resulted from glaciations during the Wisconsin glaciation, approximately 11,000 years ago.

The "Preliminary Brittle Structures Map of New York" developed by Yngvar W. Isachsen and William G. McKendree (dated 1977), indicates the presence of the following Lineon features:

1. A topographic Linear feature observed on one or more of the following: topographic map, Landsat (ERTS), Skylab, or U-2 Photographic product. This feature extends from the south side of the reservoir southward and west of the dam.

2. A tonal linear feature observed on a landsat on U-2 photographic product. This feature extends northward from the north side of the reservoir.

2.2 SUBSURFACE INVESTIGATION

A subsurface investigation was conducted during the design of the structure which included 8 drillholes and 2 test pits. The locations and soil profiles these explorations are shown on Drawings Nos. 3 and 4 which are indicated in Appendix F.

In general this investigation indicates that the subsurface soils at the dam are of glacial origin and composed of sand gravel and clay with varying quanities of boulders, over bedrock.

2.3 DAM AND APPURTENANT STRUCTURES

The dam was designed by Whitman, Requardl and Smith and also by Robert E. Horton in 1928. This design consists of a concrete gravity spillway abutted by 2 earth embankments. The configuaration of the spillway is ogee, and is founded on bedrock. The left embankment consists of homogenous earth and a concrete cut-off and core wall atop a steel sheet piling cut-off wall. The entire upstream slopes are ripraped.

2.4 CONSTRUCTION RECORDS

There are no construction records or photos available.

2.5 OPERATION RECORDS

The Basic Reservoir is used for storage and diversion to Alcove Reservoir, however, in the recent past, it has been seldom used. Records can be found in the monthly water report to the Water Commissioner.

2.6 EVALUATION OF DATA

The data presented in this report has been compiled from information obtained from Mr. David F. Bruno, Commissioner, and Mr. Roger Niles of the Department of Water and Water Supply. Some plans and previous inspection reports were on file at Dam Safety, Department of Environmental Conservation, 50 Wolf Road, Albany.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual Inspection of Basic Creek Dam and the Watershed was conducted on October 24, 1980. The weather was clear and the temperature ranged in the thirties. The reservoir level at the time of the inspection was approximately 4 feet below the spillway crest.

b. Embankment

The earth embankment showed no signs of distress. There was no evidence of sloughing, sliding, depressions, misalignment erosion or seepage. The slopes and crest of the embankments are heavily vegetated. The riprap of the upstream slopes is in good condition.

c. Spillway

The uncontrolled ogee spillway located near the left end of the dam appears to be in good condition for the age of the structure. Slight surface deterioration was observed on the downstream face of the spillway. The maximum depth of this deterioration was 2 inches. Concrete patching was also noted near the center of the downstream face. The construction joint material has deteriorated. Two seperate horizontal joints were observed on the downstream face of the spillway. One on the left side about 8 feet above the toe, and the other on the right side about 1.5 feet above the toe. These joints may have resulted from delays during pouring of the concrete. Seepage was observed emanating from the joints at a rate of less than 1 gallon per minute(gpm). The spillway buttress walls are slightly deteriorated. A new concrete buttress cap has been constructed which should slow the rate of this deterioratation. Deterioration was also observed in the vicinity of the reservoir drain outlet. No seepage was evident in the reservoir drain system.

d. Downstream Channel

The outflow channel consists of a concrete chute changing to ripraped slopes further downstream. Voids were observed in the apron between the foot bridge and the spillway and the construction joint material was deteriorated. Some debris was also noted in the channel. Additional channel wall weeps should be installed to prevent the buildup of hydrostatic pressures.

e. Intake Structure and Diversion Tunnel

The intake and diversion tunnel is located on the east side of the reservoir approximately 1500 feet north of the dam. While the exterior of the intake system appeared to be in good condition, examination of the interior and the walls of the tunnel revealed the following conditions:

1. Extensive concrete deterioration was observed between the 24 and 48 inch valves. Leakage in excess of 50 gpm was flowing through the concrete. This concrete had a honeycomb appearance.

2. Calcification and seepage was noted on the walls of the diversion tunnel. These problems appeared to be concentrated along the upstream end of the tunnel.

3. Seepage was observed on the extreme right side of the gate chamber approximately 8 feet above the 12 inch valve.

f. Reservoir Drains

The reservoir may be lowered by the 12, 24, or 48 inch gate valves contained within the intake structure on the east side of the reservoir, or by the 42 x 60 inch sluice gate located on the right side of the spillway. All valves and gates were reported to be operational and have been operated within the past year.

g. Reservoir

No sedimentation problems or instability was reported within the reservoir area. Albany County Route #404 bisects the reservoir. This relatively low lying highway has experienced flooding during the high flow conditions. During these periods the owners representatives operate the reservoir drains to reduce the flooding potential.

3.2 EVALUATION OF OBSERVATIONS

The problem areas observed during the inspection and the recommended remedial actions are as follows:

1. The deterioration of the concrete within the intake chamber has created leakage in excess of 50 gpm. This area must be repaired as soon as possible to prevent failure of the valve system.

2. Calcification and seepage within the diversion tunnel was observed near the intake chamber. This area must be investigated and repairs instituted as required to prevent further deterioration of the tunnel.

3. Seepage was noted on the right wall of the intake chamber above the 12 inch valve. This seepage should be monitored and repairs initiated if necessary.

4. Voids were observed in the spillway apron. These areas must be repaired to inhibit undermining of the apron.

5. The deteriorated construction joint material in the spillway and apron must be recaulked.

6. Two horizontal joints were observed in the spillway in which seepage was occurring. These areas must be monitored. If seepage is increasing investigate the condition of the joints and institute repairs.

7. Periodically monitor the concrete deterioration of the dam and appurtenances. Repair as required.

8. Periodically remove the debris within the downstream channel.

9. Remove the trees and brush on the slopes, crest and abutments of the abutments of the embankments. Provide a program of periodic cutting and mowing of these surfaces.

10. Provide a program of periodic inspection and maintenance of the dam and appurtenances, including yearly operation and lubrication of all gates and valves. Document this information for future reference. Also develop an emergency action plan.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The normal water surface elevation is approximated by the crest of the spillway. Basic Creek Reservoir is storage reservoir whose purpose is to augment the Alcove Reservoir, which is an Albany water supply. Augmentation of the Alcove reservoir can be accomplished by discharges through the 12, 24, or 48 inch gate valves located in the intake structure on the east side of the reservoir.

4.2 MAINTENANCE OF THE DAM

Maintenance of the dam is provided by the owner. This maintenance is not considered satisfactory due to the deterioration and seepage of the concrete of the intake chamber, diversion tunnel, spillway and apron, deterioration of construction joint material, debris in the downstream channel, and vegetation on the slopes of crests of the embankments.

4.3 WARNING SYSTEM

There is no warning system in effect or preparation.

4.4 EVALUATION

The dam and appurtenances have been maintained in unsatisfactory condition as noted in Section 3: Visual Inspection."

SECTION 5: HYDRAULIC/HYDROLOGIC

5.1 DRAINAGE AREA CHARACTERISTICS

The Basic Creek Reservoir is located on Basic Creek, tributary to Catskill Creek and the Lower Hudson River. The total area of the watershed at the Basic Creek Dam is 19.46 square miles. The terrain is of moderate slope and heavily wooded.

5.2 ANALYSIS CRITERIA

The analysis of the spillway capacity of the dam and storage of the reservoir was performed using the Corps of Engineers HEC-1 computer model. The unit hydrograph was defined by the Snyder Synthetic Unit Hydrograph method, and the Modified Puls routing procedure was incorporated. The Probable Maximum Precipation (PMP) used was 19.5" (24 hrs. 200 sq. miles) from Hydromoterological Report #33 in accordance with recommended guidelines of the Corps of Engineers. The floods selected for analysis were 20, 40, 50, 60, 80, and 100% of the Probable Maximum Flood (PMF) flows. The PMF inflow 15, 362 cfs was routed through the reservoir resulting in an onflow of 15,244 cfs.

5.3 SPILLWAY CAPACITY

The spillway is a 99. feet long concrete ogee section approximately 18 feet high with a crest elevation of 940. (USGS). Height of flow to top of dam can be 7 feet before overtopping occurs. The maximum outflow of the spillway is 6967 cfs. The outflow channel is a reinforced concrete chute which takes a bend to the right directing flow into the original streambed. The channel is crossed by a foot bridge for access to the gate house located on the right spillway abutement.

5.4 RESERVOIR CAPACITY

The reservoir capacities at the crest of the spillway and the top of dam are 2199 and 3922 acre feet respectively. Surcharge storage between spillway crest and top of dam is equivalent to 1.66"of runoff from the watershed.

5.5 FLOODS OF RECORD

There are no gaging stations on Basic Creek nor are there any historic events of extreme levels recorded. An adjacent basin was examined, Station Id: 01361570, Tenmile Creek at Oak Hill had 11. years of data. This was used in two flood frequency analysis for comparative purposes. These results are shown in Appendix C. These analysis resulted in the use of a higher basin characteristic coefficient (ct) and infiltration rate (.2"hr) than normally used for New York State.

5.6 OVERTOPPING POTENTIAL

The maximum capacity of the spillway before overtopping occurs is 6967. c.f.s. which is 52% of the PMF. The dam is overtopped by 1.8 feet during the PMF event.

5.7 EVALUATION

The spillway of Basic Creek Reservoir will pass 52% of the PMF. By the Corps of Engineers Screening Criteria, it is considered inadequate.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

No signs of major distress were observed in connection with the earth embankments or the spillway. There are a number of problem areas, discussed in "Section 3: Visual Inspection:, which if left uncorrected have the potential for the development of hazardous conditions.

b. Design and Construction Data

A structural stability analysis was conducted during the design of the dam by the engineers. This analysis is shown on Drawing No. 2 of 6 in Appendix f. The analysis assumes uplift pressures at the heel equal to 33% of the full head, and a horizontal top thrust of 5.9 kips per linear foot. The results of the analysis indicates that the resultant falls within the middle 1/3 of the base. The assumptions used during design are not appropriate by a current design standards. Therefore, the following analysis was conducted based on the Corps of Engineers Criteria.

Case	Description of Loading Conditions
1	Normal Operating Conditions, reservoir at El, 940 (spillway crest) full uplift, no tailwater.
2	Normal Operating Conditions with 7.5 k/h.f. ice load at El 938.
3	Water at 1/2 PMF lefel (El. 947) uplift as in case 1, weight of water on dam neglected, tailwater = 3.5 feet.
4	Water at PMF level (El. 949) uplift as in case 3, tailwater = 4.5 feet.
5	Normal Operating Conditions as in Case 1, with seismic forces of = 0.1.,

Case	Factor of Safety Overturning	Location of Resultant from toe	Factor of Safety Sliding
1	2.23	11.2	6.89
2	1.77	8.4	5.51
3	1.62	8.3	4.20
4	1.51	7.5	3.78
5	2.13	10.7	4.76

Location of middle 1/3 is 7.3 to 14.7 feet from the toe.

The results indicate that the spillway portion analyzed meets the recommended factors of safety for all loading conditions. Therefore, no further analysis is required at this time. Additional information concerning the structural stability analysis is included in Appendix E.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase I Inspection of Basic Creek Dam did not reveal conditions which constitute an immediate hazard to human life or property. The embankments and spillway are not considered unstable. The dam, however, has a number of problem areas which require remedial action.

b. Adequacy of Information

The information reviewed is adequate for Phase I Inspection purposes.

c. Need for Additional Investigations

No additional investigations are required at this time.

d. Urgency

The areas requiring remedial action must be initiated within 3 months and completed within 1 year of notification to the owner.

7.2 RECOMMENDATIONS

1. Repair as soon as possible the areas of deteriorated concrete and and leaking between the 24 inch and 48 inch valves within the intake chamber. Delay of repairs may result in failure of this area.

2. Repair the deteriorated concrete and control the seepage within the diversion tunnel.

3. Monitor the seepage within the intake chamber, particularly above the 12 inch valve, and repair as required.

4. Repair the voids in the concrete spillway apron to inhibit undermining.

5. Repair the deteriorated construction joint material of the spillway apron. Reinspect at least yearly and recaulk as necessary.

6. Monitor the seepage from the two horizontal joints of the spillway. If seepage increases appreciably, investigate and institute repairs.

7. Periodically monitor the concrete deterioration of the dam and appurtenances. Repair as required.

8. Periodically remove the debris within the downstream channel.

9. Remove the trees and brush on the slopes, crest and abutments of the embankments. Provide a program of periodic cutting and mowing of these surfaces.

10. Provide a program of periodic inspection and maintenance of the dam and appurtenances, including yearly operation and lubrication of all gates and valves. Document this information for future references. Also develop an emergency action plan for notification of downstream residents.

APPENDIX A

PHOTOGRAPHS

Photo #2
OGEE Section Spillway.
Note: Seepage and patching of concrete.

Photo # 3
Downstream side of spillway.
Note: Several holes in floor and seepage.

Photo # 4
Left spillway abutment.

Photo # 5
Large void in channel floor.

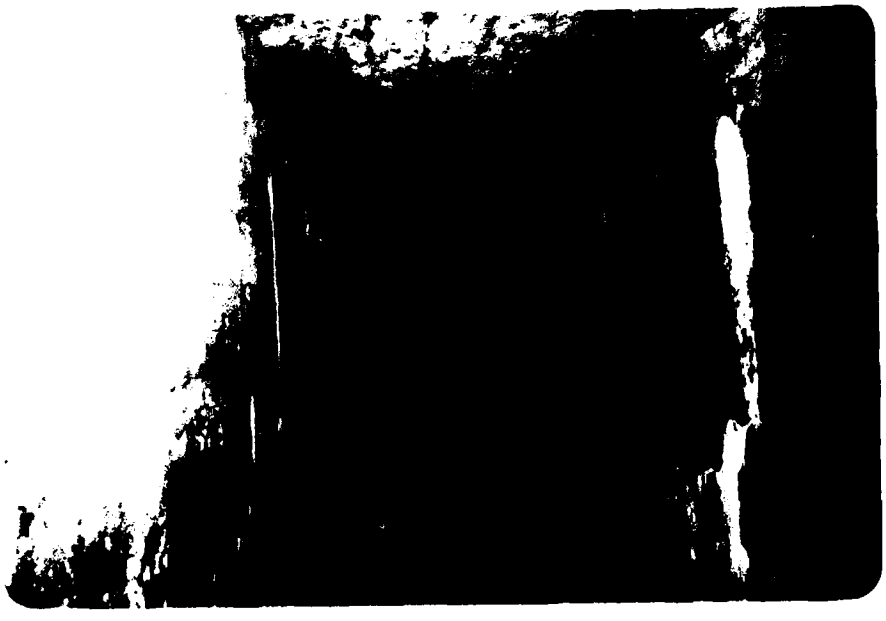


Photo # 6
Low level outlet through ogee section.
(3.5' x 5')

Photo #7
Spillway channel bending to the right towards original channel.

Photo # 8
Heavy tree and brush growth on downstream
side of right embankment.

Photo # 9
Intake of diversion to Alcove reservoir (east side).

Photo # 10
Leakage around lines into diversion intake.

APPENDIX B

VISUAL INSPECTION CHECKLIST

93-15-3(3/80)

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam BASIC CREEK DAM

Fed. I.D. # NY 84 DEC Dam No. 191-782

River Basin Lower Hudson

Location: Town Westerlo County Albany

Stream Name Basic Creek

Tributary of Catskill

Latitude (N) _____ Longitude (W) _____

Type of Dam Homogeneous earth w/ concrete cutoff

Hazard Category high

Date(s) of Inspection Oct 29, 1980

Weather Conditions clear, 50's

Reservoir Level at Time of Inspection 4' below spillcrest

b. Inspection Personnel R. McCarty J. Veitch R. Durrin, DEC.
R. Niles, Dept. of Water and Water Supply

c. Persons Contacted (Including Address & Phone No.) David F. Bruno.,
Commissioner Dept. of Water and Water Supply, Albany,
NY 12207 (518) 8661.

d. History:

Date Constructed 1928. Date(s) Reconstructed _____

Designer ~~Robert Horton~~, Whitman Requardt & Smith

Constructed By —

Owner City of Albany

93-15-3(9/80)

2) Embankment

a. Characteristics

(1) Embankment Material homogeneous earth

(2) Cutoff Type steel sheet pile

(3) Impervious Core concrete core wall

(4) Internal Drainage System none

(5) Miscellaneous

b. Crest

(1) Vertical Alignment good

(2) Horizontal Alignment good

(3) Surface Cracks none

(4) Miscellaneous

c. Upstream Slope

(1) Slope (Estimate) (V:H) 1:3

(2) Undesirable Growth or Debris, Animal Burrows some brush

(3) Sloughing, Subsidence or Depressions none

(4) Slope Protection Stone - good condition

(5) Surface Cracks or Movement at Toe None apparent

d. Downstream Slope

(1) Slope (Estimate - V:H) 1:2½

(2) Undesirable Growth or Debris, Animal Burrows heavy brush & tree growth, some burrows.

(3) Sloughing, Subsidence or Depressions none

(4) Surface Cracks or Movement at Toe none

(5) Seepage none

(6) External Drainage System (Ditches, Trenches; Blanket) None

(7) Condition Around Outlet Structure good

(8) Seepage Beyond Toe IN Spillway Channel

e. Abutments - Embankment Contact

good.

93-15-3(9/80)

(1) Erosion at Contact None

(2) Seepage Along Contact None

3) Drainage System

a. Description of System None

b. Condition of System —

c. Discharge from Drainage System —

4) Instrumentation (Momumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.) —

93-15-3(9/80)

5) Reservoir

a. Slopes shallow - stable

b. Sedimentation Normal

c. Unusual Conditions Which Affect Dam None

6) Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) UNDER County Road & thru South Westerlo, water supply

b. Seepage, Unusual Growth heavy growth of trees & brush no signs of seepage.

c. Evidence of Movement Beyond Toe of Dam None

d. Condition of Downstream Channel good, some debris

7) Spillway(s) (Including Discharge Conveyance Channel)

a. General generally good - requires maintenance seepage under floor slab

b. Condition of Service Spillway seepage through longitudal construction joints, seepage carrying material from under outlet channel floor slab large cavities under slab

c. Condition of Auxiliary Spillway None.

d. Condition of Discharge Conveyance service Channel debris, voids under floor must be repaired.

8) Reservoir Drain/Outlet

Type: Pipe _____ Conduit _____ Other ✓

Material: Concrete sluice thru ogee Metal _____ Other _____

Size: 42"x60" Length 16 feet

Invert Elevations: Entrance 923.0 Exit 922.5

Physical Condition (Describe): Unobservable _____

Material: good

Joints: good Alignment _____

Structural Integrity: good

Hydraulic Capability: 600 cfs.

Means of Control: Gate ✓ Valve _____ Uncontrolled _____

Operation: Operable ✓ Inoperable _____ Other _____

Present Condition (Describe): good.

93-15-3(9/80)

9) Structural

a. Concrete Surfaces minor pitting

b. Structural Cracking seeping through horizontal construction joints

c. Movement - Horizontal & Vertical Alignment (Settlement) none

d. Junctions with Abutments or Embankments good

e. Drains - Foundation, Joint, Face good.

f. Water Passages, Conduits, Sluices good shape

g. Seepage or Leakage through horizontal constr. joints under floor slab.

h. Joints - Construction, etc. _____

i. Foundation good, needs maintenance further investigation under spillway floor slab.

j. Abutments Appear good - recaulking of joints req'd.

k. Control Gates none

l. Approach & Outlet Channels outlet channel in need of maintenance: debris, voids, joints.

m. Energy Dissipators (Plunge Pool, etc.) not. rock @ end of outlet channel

n. Intake Structures (EAST SIDE OF RES to Alcove) poor shape leaking badly around all intakes

o. Stability good.

p. Miscellaneous _____

10) Appurtenant Structures (Power House, Lock, Gatehouse, Other)

a. Description and Condition gate house and surrounding good, badly eroded under spillway slab, seepage through horizontal construction joints. Intake on east side of reservoir badly in need of maintenance. Leaking around all intakes.

11) Operation Procedures (Lake Level Regulation):

Not normally used or needed. Only regulation normally needed is low level outlet through spillway to lower reservoir level thereby reducing flooding to the low lying roadway across the reservoir.

APPENDIX C

HYDROLOGIC/HYDRAULIC

ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	947.	320.	3922.
2) Design High Water (Max. Design Pool)	—	—	—
3) Auxiliary Spillway Crest	—	—	—
4) Pool Level with Flashboards	—	—	—
5) Service Spillway Crest	940.	265.	2199

DISCHARGES

	Volume (cfs)
1) Average Daily	15.
2) Spillway @ Maximum High Water	6967.
3) Spillway @ Design High Water	—
4) Spillway @ Auxiliary Spillway Crest Elevation	—
5) Low Level Outlet	600.
6) Total (of all facilities) @ Maximum High Water	7567.
7) Maximum Known Flood	—
8) At Time of Inspection	0.

CREST: ELEVATION: 947.0

Type: Homogeneous earth w/ concrete core wall

Width: 15 Length: 765

Spillover None

Location

SPILLWAY:

SERVICE		AUXILIARY
940.	Elevation	—
uncontrolled ogee	Type	—
99.'	Width	—
	Type of Control	
✓	Uncontrolled	—
	Controlled:	
—	Type (Flashboards; gate)	—
—	Number	—
—	Size/Length	—
	Invert Material	—
	Anticipated Length of operating service	—
150' curving to right.	Chute Length	—
2:1 slope	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	—

HYDROMETEROLOGICAL GAGES:

Type : None on Basic Creek. Dot Tennile Cr. station in vicinity

Location: —

Records:

Date - 69-78 annual peaks (Tennile Creek)

Max. Reading - 5400 cfs.

FLOOD WATER CONTROL SYSTEM:

Warning System: None

Method of Controlled Releases (mechanisms):

low level outlet through spillway
24" line to Alcove Reservoir

DRAINAGE AREA: 19.96 Mi.^{2}

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: Rural - wooded and farmland

Terrain - Relief: slight to moderate

Surface - Soil: mainly sand & gravel - glacial origin

Runoff Potential (existing or planned extensive alterations to existing (surface or subsurface conditions)

None

Potential Sedimentation problem areas (natural or man-made; present or future)

None

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

road way frequently flooded

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the Reservoir perimeter:

Location: No

Elevation:

Reservoir:

Length @ Maximum Pool 1.10 (Miles)

Length of Shoreline (@ Spillway Crest) 3.5 (Miles)

BASIC RESERVOIR.

SPILLWAY EL. 940.

$L = 99.'$

$h_{max} = 7.'$

RESERVOIR SPLIT by low embankment - due to large CAPACITY, low embankment el. Neglect.

DAM Length @ 947.0 = 750.'

SPILLWAY CAPACITY

EL.	C (Corrected Coefficient)	H	Q
940	—	—	—
942	3.4	2	952
944	3.6	4	2851
946	3.7	6	5529
947	3.7	7	6967
948	3.8	8	5512
950	3.8	10	11,396

RESERVOIR CAPACITY

EL.	CAPACITY GALS. x 10^6	CAPACITY ACRE-FT.	EL.	CAPACITY GALS. x 10^6	CAPACITY ACRE-FT.
923	0	0	32	188.2	577.6
924	21	6.4	33	225.7	
925	9.5		34	259.2	887.5
926	19.4	59.5	35	293.7	
927	35.1		36	413.4	1268.7
928	55.6	170.6	37	482.5	
929	80.7		38	556.0	1706.3
930	111.1	341.0	39	634.0	
931	146.7		40	716.4	2198.6

BASIC RESERVOIR

Main channel $\frac{20"(24000)}{\frac{1}{2}(5280)} = 7.6$ mi $S = \frac{1700-940}{40,000} = 0.019$

East branch $S = \frac{1700-[illegible]}{[illegible]} = 0.015$

$L_{ca} = 11.5"(24000)^{\frac{1}{2}}(5280) = 4.3$ mi.

$t_p = C_t(L \times L_{ca})^{0.3} = 5.69$ hrs. assuming $C_t = 2.0$

$t_r = t_p/5.5 = 1.035$ hrs.

$T_p = t_p + 2.5t_r = 6.2$ hrs.

$C_p = 0.625$

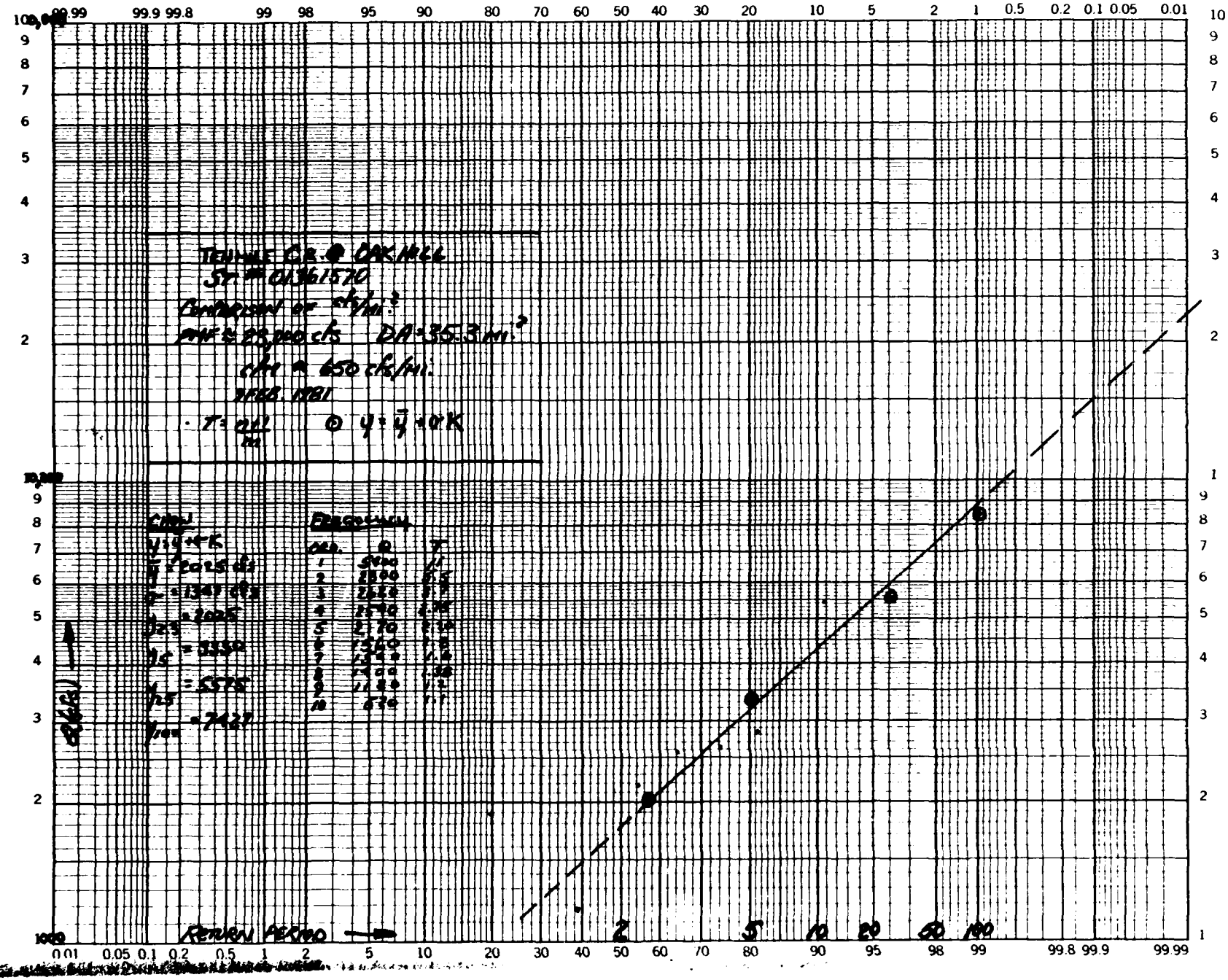
Assuming $C_t = 2.5$
$t_p = 7.11$
$t_r = 1.3$
$T_p = 7.75$
USE this as it corrected w/ further analysis

DRAINAGE AREA 19.46 mi.^{2}

Σ PRECIP = 19.5"

%	6	12	24	48
	103	115	126	134

[illegible] 1723 acre ft = $\frac{(x)}{12}"(19.4)(640)$


K·E PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO
46 8040
99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.8 99.9 99.99
RETURN PERIOD
2 5 10 20 50 100

PGM J407 VER 0.4

RUN DATE 11/ 1/77

U. S. GEOLOGICAL SURVEY
LOG-PEARSON TYPE III FLOOD FREQUENCY ANALYSIS
FOLLOWING WATER RESOURCES COUNCIL GUIDELINES

---- NOTICE ---------- NOTICE ----
PRELIMINARY COMPUTATIONS
USER RESPONSIBLE FOR ASSESSMENT
AND INTERPRETATION

STATION ID: 01361570 NAME: TENMILE CREEK AT OAK HILL NY CASE NO 1

LOG-PEARSON TYPE III FREQUENCY CURVES

***LPMTAB CANT CALC EXPCTD-PROB DISCHG AT NOMINAL PROB 0.00200. CORRESP PROB ON SRC CURVE IS 1.287E-05

EXCEEDANCE PROBABILITY	DISCHARGES: SYSTEMATIC RECORD	SRC ADJUSTED	EXPECTED PROBABILITY	95% CONFIDENCE LIMIT (ONE-SIDED TEST) LOWER	UPPER
0.9950	253.4	551.8	551.8	243.6	790.3
0.9900	323.9	551.8	551.8	243.6	790.3
0.9500	589.8	551.8	551.8	243.6	790.3
0.9000	775.7	551.8	551.8	243.6	790.3
0.8000	1042.6	1303.3	1046.2	980.8	1553.4
0.5000	1643.3	1666.1	1666.1	1374.6	2002.5
0.2000	2270.6	2196.8	2237.0	1845.8	2901.4
0.1000	2568.8	2571.1	2787.5	2118.7	3689.6
0.0400	2841.6	3071.0	3570.1	2445.9	4899.5
0.0200	2990.3	3423.5	4322.8	2685.6	5961.3
0.0100	3104.3	3873.9	5338.8	2925.3	7168.2
0.0050	3192.5	4305.5	6898.9	3166.4	8539.7
0.0020	3280.1	4913.5	********	3492.2	10641.3

PGM J407 VER 0.4

RUN DATE 11/ 1/77

U. S. GEOLOGICAL SURVEY
LOG-PEARSON TYPE III FLOOD FREQUENCY ANALYSIS
FOLLOWING WATER RESOURCES COUNCIL GUIDELINES

---- NOTICE --------- NOTICE ----
PRELIMINARY COMPUTATIONS
USER RESPONSIBLE FOR ASSESSMENT
AND INTERPRETATION

STATION ID: 01361570 NAME: TENMILE CREEK AT DAM MILL NY CASE A

W R C LOG-PEARSON TYPE III CURVE FITTING

**** WRCADJ - WARNING - SYS REC PERIOD OR HGH SYS PEAKS FALLS BELOW WRC SPEC 9. 9

HIGH OUTLIERS AND HISTORIC PEAKS TO BE TREATED AFTER TREATING LOW OUTLIERS.

1 LOW OUTLIERS BELOW WRC CRITERION OF 551.81 CFS. HAVE BEEN DROPPED.

HIGH OUTLIERS AND HISTORIC PEAKS WERE NOTED.

CONDITIONAL PROBABILITY ADJUSTMENT WAS APPLIED TO WRC FREQUENCY CURVE.

ANNUAL FLOOD STATISTICS

	SYSTEMATIC RECORD	ESTIMATES
MEAN	3.1757	3.2312 S
STANDARD DEVIATION	0.2133	0.1358 S
SKEW COEFFICIENTS		
STATION	-1.1512	0.2095
GENERALIZED	--	0.4200
WRC WEIGHTED	--	0.4200 *
FLOOD BASE (CFS)	0.0	551.8
PROB(PEAK > BASE)	1.0000	0.8951
NUMBER OF PEAKS	9	10
PERIOD (YEARS)	9	10

S - SYNTHETIC
* ADOPTED FOR FINAL COMPUTATIONS

STATION 01361570 TENMILE CREEK AT [illegible] HILL, N.Y.

TOTAL D.A. = 35.3 CONTR. D.A. =
GAGE DATUM = 588.19 FT.

WATER YEAR	ANNUAL PEAK DISCH,CFS	DATE	CODES	HIGHEST SINCE	GAGE HEIGHT OF ANNUAL PEAK,FT	CODE	ANNUAL MAX GAGE HT.FT	DATE	CODE
1960	2800	09-12-60	HP						
1969	1120	04-23-69			5.24				
1970	1400	04-02-70			5.55				
1971	520	04-03-71			4.42	NM	4.97	07-13-71	BW
1972	1560	06-22-72			5.71				
1973	2540	06-30-73			6.43				
1974	2620	07-03-74			6.48				
1975	1540	04-03-75			5.69				
1976	1380	06-16-75			5.53				
1977	2170	3-14-77			6.19				
1978	5400	11-8-77			7.98				

NEW YORK STATE
DEPT OF ENVIRONMENTAL CONSERVATION
FLOOD PROTECTION BUREAU

1	A1	[illegible]									
2	A2	[illegible]									
3	A3	[illegible]									
4	C	[illegible]	[illegible]	15	0	0	0	0	0	0	0
5	N1	[illegible]									
6	J	1	[illegible]	1							
7	J1	.2	.4	.5	.6	.8	1				
8	K	[illegible]	1			2		1			
9	K1	[illegible]	[illegible]	[illegible]							
10	[illegible]	[illegible]	[illegible]	19,46							
11	P	[illegible]	13,[illegible]	103	115	126	134				
12	T	[illegible]						1	.2		
13	[illegible]	[illegible]	.43								
14	X	-[illegible]	-.	1							
15	[illegible]	[illegible]	[illegible]			2		1			
16	K1	[illegible]	[illegible]	[illegible]	[illegible]						
17	Y				1	1					
18	Y1	1						-940.0	-1		
19	Y4	[illegible]	[illegible]	944	946	947	948	950			
20	Y5	[illegible]	[illegible]	2131	3529	6967	8512	11896			
21	Y6	[illegible]	[illegible]	59,5	170,6	341,0	577,6	887,5	1260,7	1706,3	2198,6
22	IF	[illegible]	[illegible]	926	923	930	932	934	936	939	940
23	[illegible]	[illegible]									
24	S0	[illegible]	[illegible]	1,5	75[illegible]						
25	[illegible]	[illegible]									
26	A										
27	[illegible]										
28	A										
29	A										
30	A										

CALCULATIONS

1

1

NEW YORK STATE
DEPT OF ENVIRONMENTAL CONSERVATION
FLOOD PROTECTION BUREAU

RUN DATE 11/25/

JOB SPECIFICATION

NPLAN	NSTAN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
	25	0	0	0	0	0	0	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 6 LRTIO= 1
RTIOS= 0.20 0.40 0.50 0.60 0.80 1.00

SUB-AREA RUNOFF COMPUTATION

IFTY	INAME	ISTAGE	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
			1	0	0	2	0	1	0	0

HYDROGRAPH DATA

IHYD	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	19.45	0.	19.45	0.	0.	0	0	0

PRECIP DATA

TFA	P1S	6H	12H	24H	48H	72H	96H
.	19.50	103.00	115.00	126.00	134.00	0.	0.

TRSPC COMPUTED BY THE PROGRAM IS 0.22

LOSS DATA

LOSS	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	.	.	1.00	0.	0.	1.00	1.00	0.20	0.	0.

UNIT HYDROGRAPH DATA
TP= 7.73 CP=0.63 NTA= 0

RECESSION DATA
STRTQ= -2.0 QRCSN= -0.26 RTIOR= 1.00
APPROXIMATE CLARK COEFFICIENTS FOR 1 SUB-AREA(S) CP AND TP ARE TC=33.57 AND R=28.86 INTERVALS

UNIT HYDROGRAPH ORDINATES, LAG= 7.77 HOURS, CP= 0.63 VOL= 0.94

0.	0.	0.	74.	114.	152.	192.	235.	280.	326.
374.	424.	477.	524.	575.	629.	682.	734.	783.	827.
868.	907.	944.	980.	1011.	1028.	1041.	1049.	1053.	1053.
1050.	1045.	1040.	1033.	979.	946.	913.	882.	852.	823.
795.	768.	742.	717.	692.	669.	646.	624.	603.	582.
562.	543.	524.	507.	489.	473.	457.	441.	426.	412.
398.	384.	371.	358.	346.	334.	323.	312.	301.	291.
281.	272.	262.	253.	244.	236.	228.	221.	213.	206.
199.	192.	185.	179.	173.	167.	161.	156.	151.	145.

						1.02	1.15	101	0.03	0.	[illegible]	39.
						1.02	1.30	102	[illegible]	0.	0.03	39.
						1.02	1.45	103	0.03	0.	0.03	39.
						1.02	2.00	104	0.03	0.	0.03	39.
						1.02	2.15	105	0.03	0.	0.03	39.
						1.02	2.30	106	0.03	0.	0.03	39.
						1.02	2.45	107	0.03	0.	0.03	39.
						1.02	3.00	108	0.03	0.	0.03	39.
						1.02	3.15	109	0.03	0.	0.03	39.
						1.02	3.30	110	0.03	0.	0.03	39.
						1.02	3.45	111	0.03	0.	0.03	39.
						1.02	4.00	112	0.03	0.	0.03	39.
						1.02	4.15	113	0.03	0.	0.03	39.
						1.02	4.30	114	0.03	0.	0.03	39.
						1.02	4.45	115	0.03	0.	0.03	39.
						1.02	5.00	116	0.03	0.	0.03	39.
						1.02	5.15	117	0.03	0.	0.03	39.
						1.02	5.30	118	0.03	0.	0.03	39.
						1.02	5.45	119	0.03	0.	0.03	39.
						1.02	6.00	120	0.03	0.	0.03	39.
						1.02	6.15	121	0.03	0.03	0.05	39.
						1.02	6.30	122	0.04	0.03	0.05	40.
						1.02	6.45	123	0.04	0.03	0.05	41.
						1.02	7.00	124	0.04	0.03	0.05	44.
						1.02	7.15	125	0.08	0.03	0.05	47.
						1.02	7.30	126	0.08	0.03	0.05	52.
						1.02	7.45	127	0.08	0.03	0.05	57.
						1.02	8.00	128	0.08	0.03	0.05	65.
						1.02	8.15	129	0.08	0.03	0.05	73.
						1.02	8.30	130	0.08	0.03	0.05	83.
						1.02	8.45	131	0.09	0.03	0.05	94.
						1.02	9.00	132	0.08	0.03	0.05	107.
						1.02	9.15	133	0.08	0.03	0.05	121.
						1.02	9.30	134	0.08	0.03	0.05	137.
						1.02	9.45	135	0.08	0.03	0.05	154.
						1.02	10.00	136	0.08	0.03	0.05	173.
						1.02	10.15	137	0.08	0.03	0.05	194.
						1.02	10.30	138	0.08	0.03	0.05	216.
						1.02	10.45	139	0.08	0.03	0.05	240.
						1.02	11.00	140	0.08	0.03	0.05	265.
						1.02	11.15	141	0.08	0.03	0.05	291.
						1.02	11.30	142	0.08	0.03	0.05	318.
						1.02	11.45	143	0.08	0.03	0.05	346.
						1.02	12.00	144	0.08	0.03	0.05	375.
						1.02	12.15	145	0.41	0.36	0.05	407.
						1.02	12.30	146	0.41	0.36	0.05	446.
						1.02	12.45	147	0.41	0.36	0.05	493.
						1.02	13.00	148	0.41	0.36	0.05	551.
						1.02	13.15	149	0.50	0.45	0.05	621.
						1.02	13.30	150	0.50	0.45	0.05	703.
						1.02	13.45	151	0.50	0.45	0.05	805.
						1.02	14.00	152	0.50	0.45	0.05	921.
						1.02	14.15	153	0.62	0.57	0.05	1055.
						1.02	14.30	154	0.62	0.57	0.05	1210.
						1.02	14.45	155	0.62	0.57	0.05	1380.
						1.02	15.00	156	0.62	0.57	0.05	1584.
						1.02	15.15	157	0.63	0.58	0.05	1806.
						1.02	15.30	158	1.26	1.21	0.05	2057.
						1.02	15.45	159	3.51	3.46	0.05	2359.
						1.02	16.00	160	0.58	0.53	0.05	2725.
						1.02	16.15	161	0.58	0.53	0.05	3147.
						1.02	16.30	162	0.58	0.53	0.05	3614.

1.01	17.15				39.	1.02	17.15	195	0.45	0.40	0.05	5230.	
1.01	17.30				39.	1.02	17.30	196	0.45	0.40	0.05	5737.	
1.01	17.45				39.	1.02	17.45	197	0.45	0.40	0.05	6460.	
1.01	18.00				39.	1.02	18.00	198	0.45	0.40	0.05	7104.	
1.01	18.15				39.	1.02	18.15	199	0.04	0.	0.04	7762.	
1.01	18.30				39.	1.02	18.30	170	0.04	0.	0.04	8426.	
1.01	18.45				39.	1.02	18.45	171	0.04	0.	0.04	9091.	
1.01	19.00				39.	1.02	19.00	172	0.04	0.	0.04	9752.	
1.01	19.15				39.	1.02	19.15	173	0.04	0.	0.04	10403.	
1.01	19.30				39.	1.02	19.30	174	0.04	0.	0.04	11041.	
1.01	19.45				39.	1.02	19.45	175	0.04	0.	0.04	11660.	
1.01	20.00				39.	1.02	20.00	176	0.04	0.	0.04	12250.	
1.01	20.15				39.	1.02	20.15	177	0.04	0.	0.04	12800.	
1.01	20.30				39.	1.02	20.30	178	0.04	0.	0.04	13303.	
1.01	20.45				39.	1.02	20.45	179	0.04	0.	0.04	13753.	
1.01	21.00				39.	1.02	21.00	180	0.04	0.	0.04	14150.	
1.01	21.15				39.	1.02	21.15	181	0.04	0.	0.04	14492.	
1.01	21.30				39.	1.02	21.30	182	0.04	0.	0.04	14778.	
1.01	21.45				39.	1.02	21.45	183	0.04	0.	0.04	15008.	
1.01	22.00				39.	1.02	22.00	184	0.04	0.	0.04	15182.	
1.01	22.15				39.	1.02	22.15	185	0.04	0.	0.04	15298.	
1.01	22.30				39.	1.02	22.30	186	0.04	0.	0.04	15358.	
1.01	22.45				39.	1.02	22.45	187	0.04	0.	0.04	15362.	
1.01	23.00				39.	1.02	23.00	188	0.04	0.	0.04	15312.	
1.01	23.15				39.	1.02	23.15	189	0.04	0.	0.04	15208.	
1.01	23.30				39.	1.02	23.30	190	0.04	0.	0.04	15052.	
1.01	23.45				39.	1.02	23.45	191	0.04	0.	0.04	14839.	
1.01	0.				39.	1.03	0.	192	0.04	0.	0.04	14563.	
1.01	0.15				39.	1.03	0.15	193	0.	0.	0.	14235.	
1.01	0.30				39.	1.03	0.30	194	0.	0.	0.	13860.	
1.01	0.45				39.	1.03	0.45	195	0.	0.	0.	13512.	
1.02	1.00				39.	1.03	1.00	196	0.	0.	0.	13133.	
1.02	1.15				39.	1.03	1.15	197	0.	0.	0.	12740.	
1.02	1.30				39.	1.03	1.30	198	0.	0.	0.	12355.	
1.02	1.45				39.	1.03	1.45	199	0.	0.	0.	11969.	
1.02	2.00				39.	1.03	2.00	200	0.	0.	0.	11572.	
								SUM	21.48	16.04	5.45	485803.	
									(546.)	(407.)	(138.)	(13756.41)	

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
	15362.	14[illegible]2.	4998.	2400.	479989.
	415.	399.	140.	66.	13592.
		5.74	9.48	9.56	9.56
		171.19	240.00	242.83	242.83
		6991.	9834.	9917.	9917.
		6624.	12130.	12233.	12233.

DV.

WARNING *** T[illegible] OUTLET IS NOT WITHIN RANGE OF GIVEN ELEVATIONS IN STORAGE-ELEVATION DATA
[illegible]
ST[illegible] ELEVATION 940.CC

STATION [illegible] 1, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

1.	[illegible]	[illegible]	[illegible]	6.	4.	5.	5.	6.	6.
7.	[illegible]	[illegible]	[illegible]	7.	9.	10.	10.	10.	11.
11.	[illegible]	[illegible]	[illegible]	12.	13.	13.	13.	13.	14.
[illegible]	[illegible]	[illegible]	[illegible]	12.	15.	15.	15.	15.	16.
[illegible]	[illegible]	[illegible]	[illegible]	15.	16.	16.	17.	17.	17.
17.	[illegible]	17.	[illegible]	17.	17.	17.	18.	18.	18.
[illegible]	[illegible]	[illegible]	[illegible]	13.	18.	18.	18.	18.	18.
[illegible]	[illegible]	[illegible]	[illegible]	19.	19.	19.	19.	19.	19.
[illegible]	[illegible]	[illegible]	[illegible]	17.	19.	19.	19.	19.	19.
[illegible]	[illegible]	[illegible]	[illegible]	17.	19.	19.	19.	19.	19.
[illegible]	[illegible]	[illegible]	[illegible]	17.	19.	19.	19.	19.	19.
[illegible]	[illegible]	[illegible]	[illegible]	17.	19.	19.	19.	19.	19.
[illegible]	[illegible]	[illegible]	[illegible]	21.	20.	20.	21.	21.	22.
[illegible]	[illegible]	[illegible]	27.	21.	31.	33.	36.	39.	42.
[illegible]	[illegible]	[illegible]	[illegible]	65.	71.	77.	84.	92.	102.
[illegible]	[illegible]	[illegible]	156.	175.	138.	223.	252.	286.	324.
[illegible]	[illegible]	[illegible]	567.	623.	717.	800.	901.	1068.	1256.
[illegible]	[illegible]	[illegible]	[illegible]	2542.	2835.	3155.	3514.	3860.	4151.
[illegible]	[illegible]	[illegible]	[illegible]	5595.	5851.	6041.	6226.	6366.	6520.
[illegible]	[illegible]	[illegible]	[illegible]	6601.	6735.	6750.	6695.	6620.	6542.

STORAGE

[illegible]	[illegible]	[illegible]	[illegible]	2200.	2201.	2201.	2201.	2202.	2202.
[illegible]	[illegible]	[illegible]	[illegible]	2203.	2203.	2204.	2204.	2204.	2204.
[illegible]	[illegible]	[illegible]	[illegible]	2205.	2205.	2205.	2205.	2206.	2206.
[illegible]	[illegible]	[illegible]	[illegible]	2205.	2206.	2206.	2205.	2207.	2207.
2207.	[illegible]	[illegible]	2207.	2207.	2207.	2207.	2207.	2207.	2207.
[illegible]	[illegible]	[illegible]	2207.	2208.	2208.	2208.	[illegible]	2208.	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	2208.	2209.	2209.	[illegible]	2208.	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	2208.	2208.	2209.	2208.	2208.	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	2209.	2208.	2208.	2208.	2208.	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	2208.	2208.	2208.	2208.	2208.	2208.
[illegible]	[illegible]	[illegible]	[illegible]	2208.	2209.	2209.	2209.	2209.	2209.
[illegible]	[illegible]	[illegible]	[illegible]	2207.	2209.	2209.	2209.	2209.	2209.
[illegible]	[illegible]	[illegible]	[illegible]	2207.	2209.	2209.	2209.	2209.	2210.
2211.	[illegible]	[illegible]	2212.	2213.	2214.	2216.	2217.	2215.	2220.
[illegible]	[illegible]	[illegible]	[illegible]	2233.	2235.	2238.	2242.	2246.	2251.
[illegible]	[illegible]	[illegible]	2270.	2289.	2311.	2314.	2329.	2346.	2366.
[illegible]	[illegible]	[illegible]	[illegible]	2521.	2564.	2612.	2665.	2721.	2780.
2841.	[illegible]	[illegible]	3036.	3103.	3171.	3235.	3305.	3369.	3430.
[illegible]	[illegible]	[illegible]	[illegible]	3687.	3727.	3763.	3795.	3822.	3845.
[illegible]	[illegible]	[illegible]	[illegible]	3891.	3871.	3884.	3875.	3863.	3849.

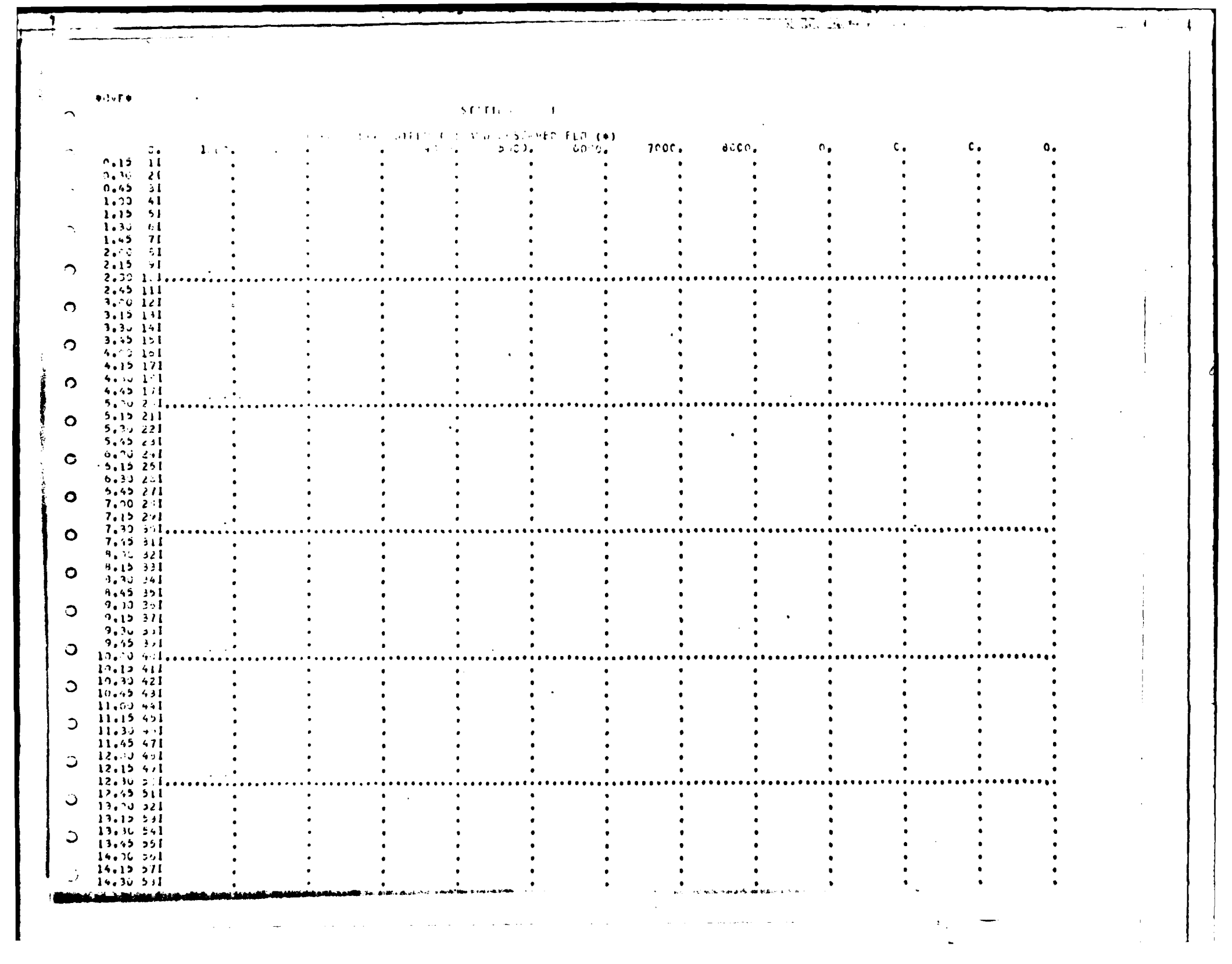
STAGE

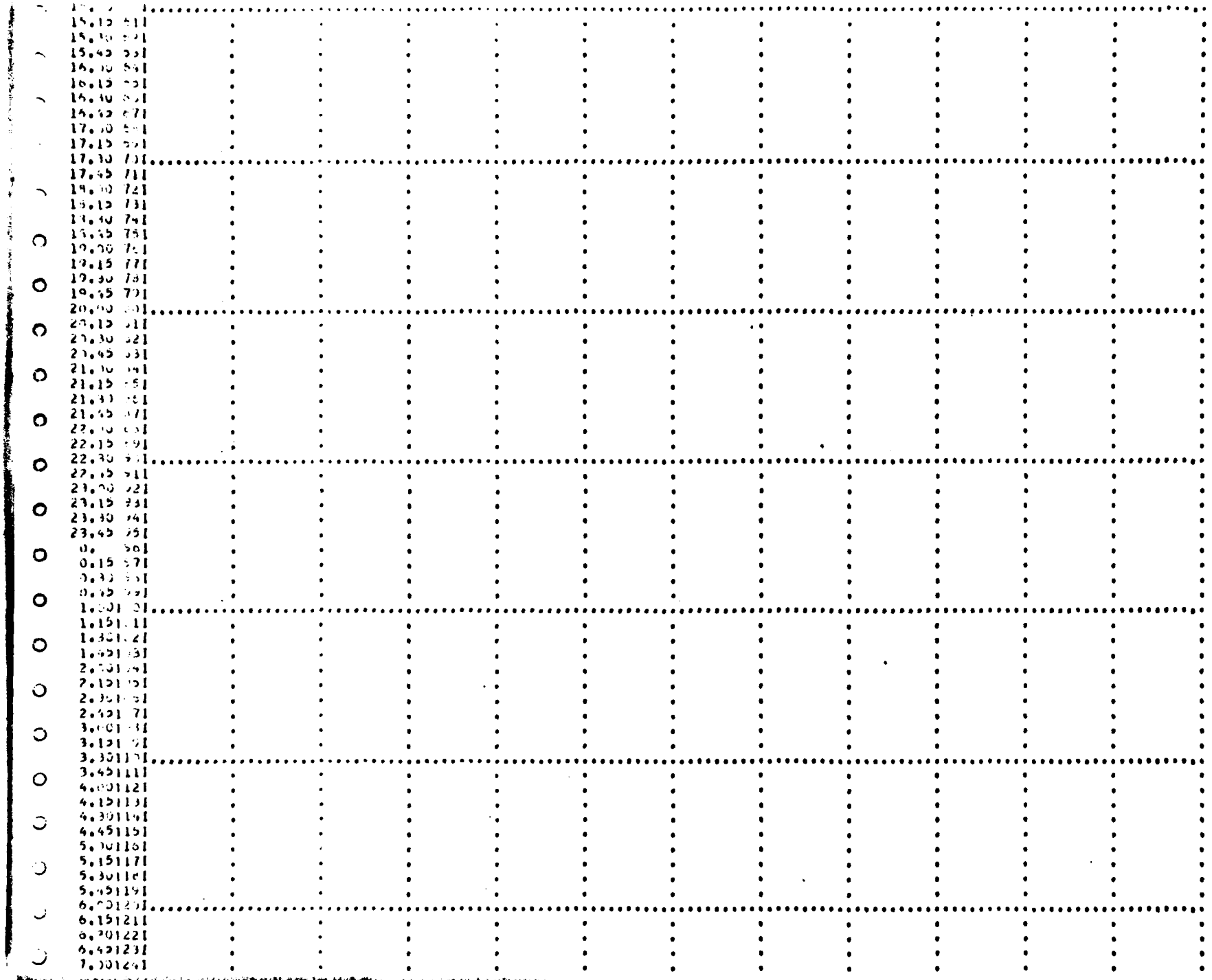
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0

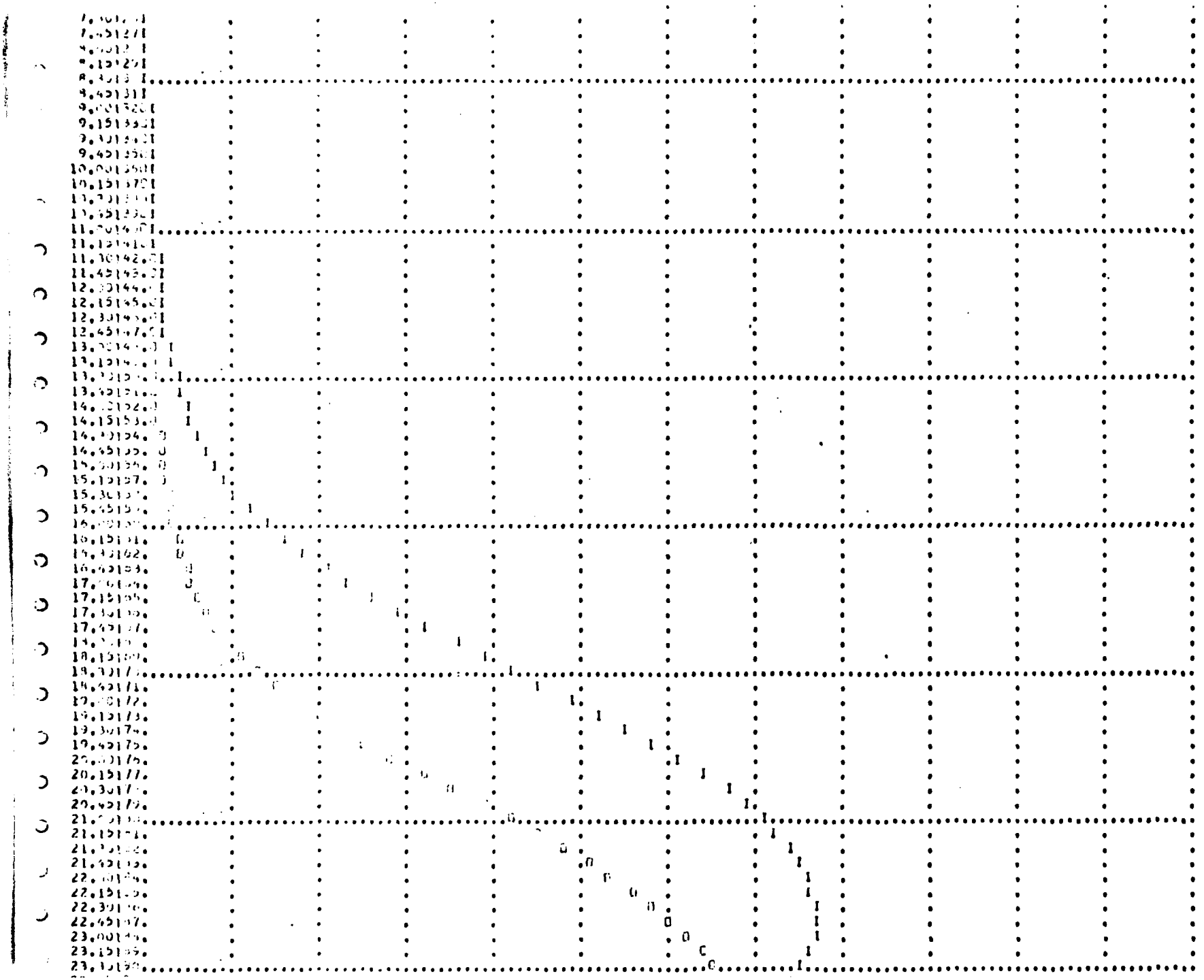
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
940.0	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
940.0	[illegible]	[illegible]	.1	940.1	940.1	940.0	940.0	940.0	940.0
940.1	[illegible]	[illegible]	.1	940.1	940.1	940.1	940.1	940.1	940.1
940.1	[illegible]	[illegible]	.1	940.1	940.1	940.1	940.2	940.2	940.2
940.2	[illegible]	[illegible]	.3	940.4	940.4	940.5	940.5	940.6	940.7
940.5	[illegible]	[illegible]	.1	941.1	941.3	941.5	941.7	941.9	942.1
942.1	[illegible]	[illegible]	.1	943.4	943.7	944.0	944.2	944.5	944.8
945.2	[illegible]	[illegible]	.7	945.9	946.1	946.2	946.4	946.5	946.6
946.8	[illegible]	[illegible]	.8	946.9	946.9	946.9	946.8	946.8	946.7

PEAK OUTFLOW IS [illegible]

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
[illegible]	8801.	5079.	1692.	801.	160134.
[illegible]	195.	141.	47.	23.	4524.
[illegible]		2.71	3.16	3.19	3.19
[illegible]		60.96	80.23	81.01	81.01
[illegible]		2815.	3277.	3309.	3309.
[illegible]		3474.	4042.	4081.	4081.







WARNING *** [illegible] OUTFLOW IS NOT WITHIN RANGE OF GIVEN ELEVATIONS IN STORAGE-ELEVATION DATA

STO[illegible] [illegible] ELEVATION 940.00

STATION [illegible] 1, PLAN 1, RATIO 6

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

[illegible]	[illegible]	[illegible]	[illegible]	7.	8.	9.	11.	12.	13.
15.	[illegible]	[illegible]	17.	13.	18.	19.	20.	21.	21.
[illegible]	[illegible]	[illegible]	[illegible]	25.	25.	26.	26.	27.	27.
[illegible]	[illegible]	[illegible]	[illegible]	27.	30.	30.	30.	31.	31.
31.	[illegible]	[illegible]	[illegible]	33.	33.	33.	33.	33.	34.
[illegible]	[illegible]	[illegible]	[illegible]	35.	35.	35.	35.	35.	35.
[illegible]	[illegible]	[illegible]	[illegible]	35.	36.	36.	36.	36.	37.
[illegible]	[illegible]	[illegible]	[illegible]	37.	37.	37.	37.	37.	37.
37.	[illegible]	[illegible]	[illegible]	38.	38.	38.	38.	38.	38.
[illegible]	[illegible]	[illegible]	[illegible]	38.	38.	38.	38.	38.	38.
[illegible]	[illegible]	[illegible]	[illegible]	38.	38.	39.	38.	39.	38.
[illegible]	[illegible]	[illegible]	[illegible]	37.	39.	39.	39.	39.	39.
[illegible]	[illegible]	[illegible]	[illegible]	38.	40.	40.	41.	42.	43.
[illegible]	[illegible]	[illegible]	[illegible]	57.	61.	66.	71.	77.	84.
[illegible]	[illegible]	[illegible]	113.	130.	141.	154.	169.	185.	204.
[illegible]	[illegible]	[illegible]	310.	351.	326.	446.	505.	571.	649.
[illegible]	[illegible]	[illegible]	[illegible]	1519.	1624.	2155.	2610.	2901.	3354.
[illegible]	[illegible]	[illegible]	[illegible]	5417.	7030.	8370.	9775.	11036.	12059.
[illegible]	[illegible]	[illegible]	[illegible]	14107.	15021.	15160.	15233.	15244.	15157.
[illegible]	[illegible]	[illegible]	[illegible]	14145.	13817.	13471.	13112.	12745.	12373.

STORAGE

[illegible]	[illegible]	[illegible]	[illegible]	2202.	2203.	2204.	2204.	2205.	2205.
[illegible]	[illegible]	[illegible]	2207.	2203.	2208.	2209.	2209.	2209.	2210.
[illegible]	[illegible]	[illegible]	2211.	2211.	2212.	2212.	2212.	2212.	2213.
[illegible]	[illegible]	[illegible]	2214.	2214.	2214.	2214.	2214.	2214.	2215.
[illegible]	[illegible]	[illegible]	[illegible]	2215.	2216.	2216.	2216.	2216.	2216.
[illegible]	[illegible]	[illegible]	[illegible]	2215.	2217.	2217.	2217.	2217.	2217.
2217.	[illegible]	[illegible]	2217.	2217.	2217.	2217.	2217.	2217.	2218.
[illegible]	[illegible]	[illegible]	[illegible]	2213.	2218.	2218.	2218.	2218.	2218.
[illegible]	[illegible]	[illegible]	[illegible]	2211.	2218.	2218.	2218.	2218.	2218.
[illegible]	[illegible]	[illegible]	[illegible]	2213.	2218.	2218.	2218.	2218.	2218.
[illegible]	[illegible]	[illegible]	[illegible]	2213.	2218.	2218.	2218.	2219.	2218.
[illegible]	[illegible]	[illegible]	[illegible]	2217.	2219.	2219.	2219.	2219.	2219.
[illegible]	[illegible]	[illegible]	[illegible]	2217.	2219.	2219.	2220.	2220.	2221.
[illegible]	[illegible]	[illegible]	[illegible]	2221.	2230.	2233.	2235.	2239.	2242.
[illegible]	[illegible]	[illegible]	[illegible]	2265.	2272.	2278.	2285.	2294.	2304.
[illegible]	[illegible]	[illegible]	[illegible]	2381.	2413.	2429.	2463.	2494.	2534.
[illegible]	[illegible]	[illegible]	[illegible]	2637.	2917.	3003.	3095.	3192.	3254.
[illegible]	[illegible]	[illegible]	[illegible]	3121.	3935.	4034.	4115.	4181.	4230.
4267.	[illegible]	[illegible]	4333.	4345.	4354.	4359.	4362.	4362.	4361.
[illegible]	[illegible]	[illegible]	[illegible]	4313.	4305.	4290.	4275.	4259.	4242.

STAGE

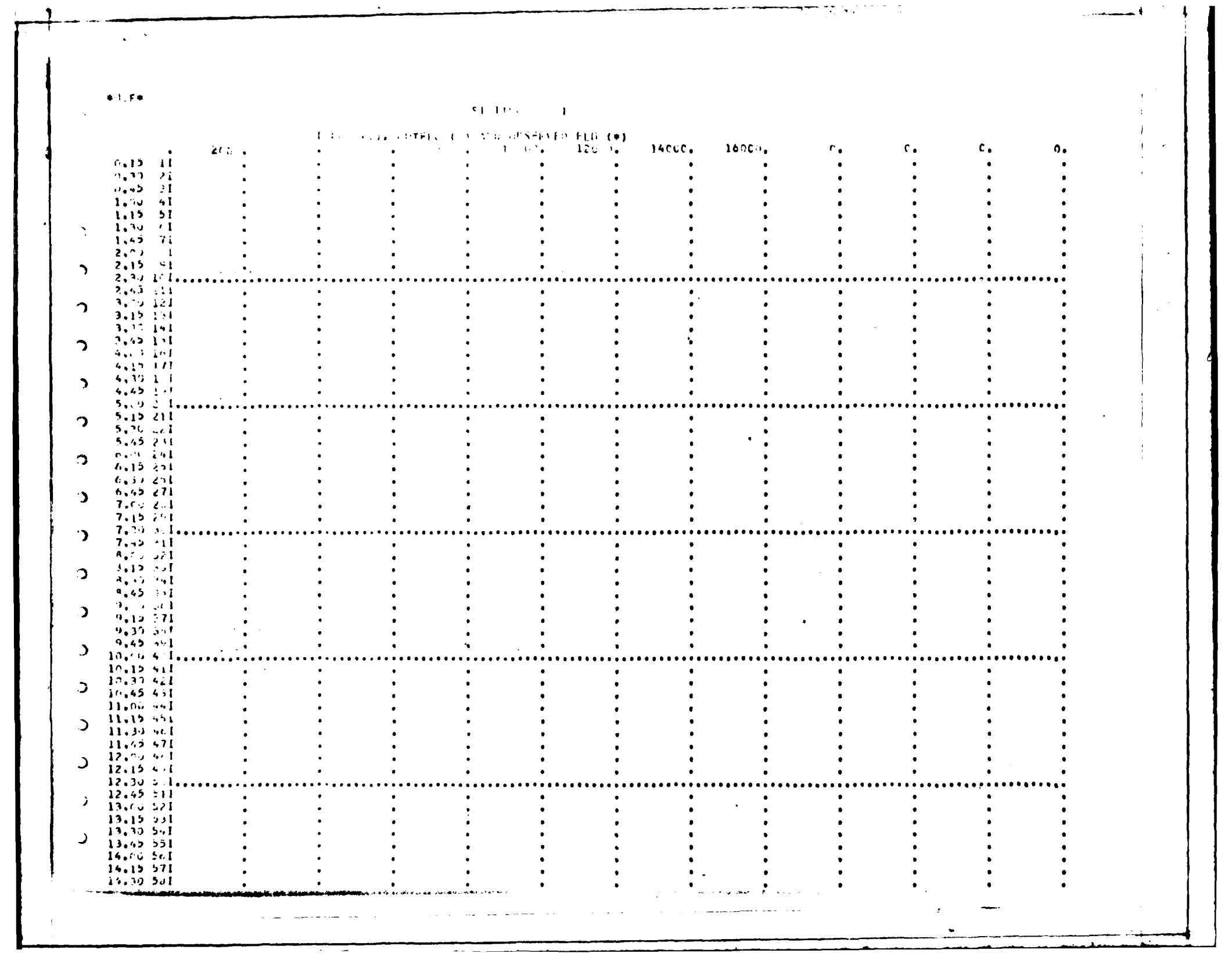
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.0	940.0	940.0	940.0	940.0	940.0
[illegible]	[illegible]	[illegible]	[illegible]	940.1	940.1	940.1	940.1	940.1	940.1
[illegible]	[illegible]	[illegible]	[illegible]	940.1	940.1	940.1	940.1	940.1	940.1
[illegible]	[illegible]	[illegible]	[illegible]	940.1	940.1	940.1	940.1	940.1	940.1
[illegible]	[illegible]	[illegible]	[illegible]	940.1	940.1	940.1	940.1	940.1	940.1
[illegible]	[illegible]	[illegible]	[illegible]	940.1	940.1	940.1	940.1	940.1	940.1
[illegible]	[illegible]	[illegible]	[illegible]	940.1	940.1	940.1	940.1	940.1	940.1

.1	.1	.1	.1	.1	.1	940.1	940.1	940.1	.1
.1	.1	.1	.1	.1	.1	940.1	940.1	940.1	.1
.1	.1	.1	.1	.1	.1	940.1	940.1	940.1	.1
.1	.1	.1	.1	940.1	94 .1	940.1	940.1	940.1	.1
.1	.1	.1	.1	940.1	94 .1	940.1	940.1	940.2	.2
.2	.2	.2	.2	940.3	94 .3	940.3	940.4	940.4	.4
.5	.5	.5	.7	940.7	94 .8	940.9	941.1	941.2	941.4
.5	.5	.6	.6	942.6	94 .9	943.3	943.8	944.0	.4
.9	.8	.7	.8	946.8	947.1	947.5	947.8	948.1	.3
.9	.8	.8	.7	946.7	94 .8	948.8	948.6	948.6	.6
.9	.8	.7	.7	946.8	94 .6	948.5	948.4	948.4	.3

PEAK OUTFLOW IS 15245. AT [illegible]

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
	15245.	15472.	3930.	1908.	301103.
	434.	3 1.	112.	54.	10752.
		6.44	7.53	7.59	7.59
		163.57	191.24	192.80	192.80
		7810.	7810.	7874.	7874.
		8240.	9634.	9712.	9712.

LF


0.15
0.30
0.45
1.00
1.15
1.30
1.45
2.00
2.15
2.30
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3.30
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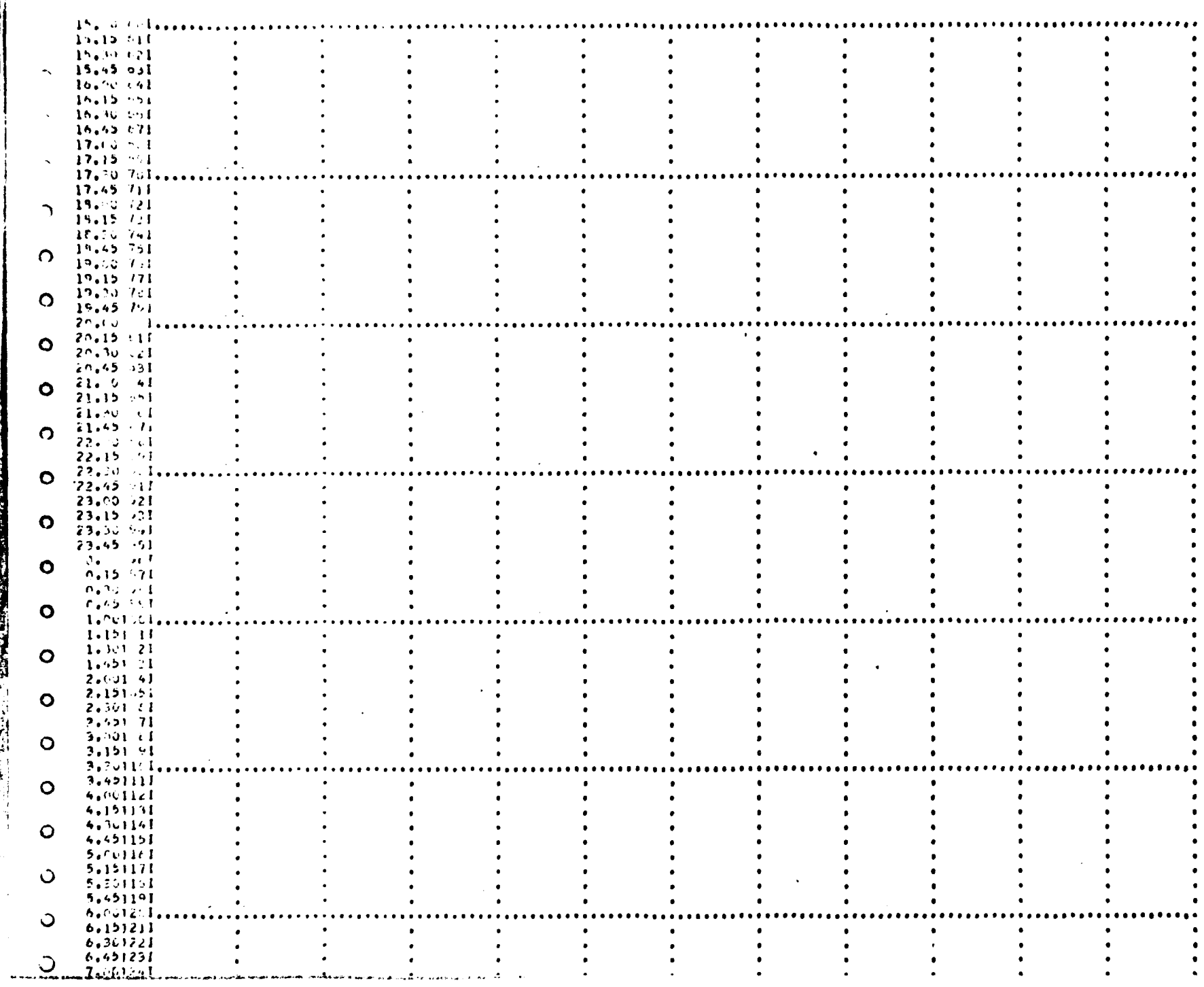
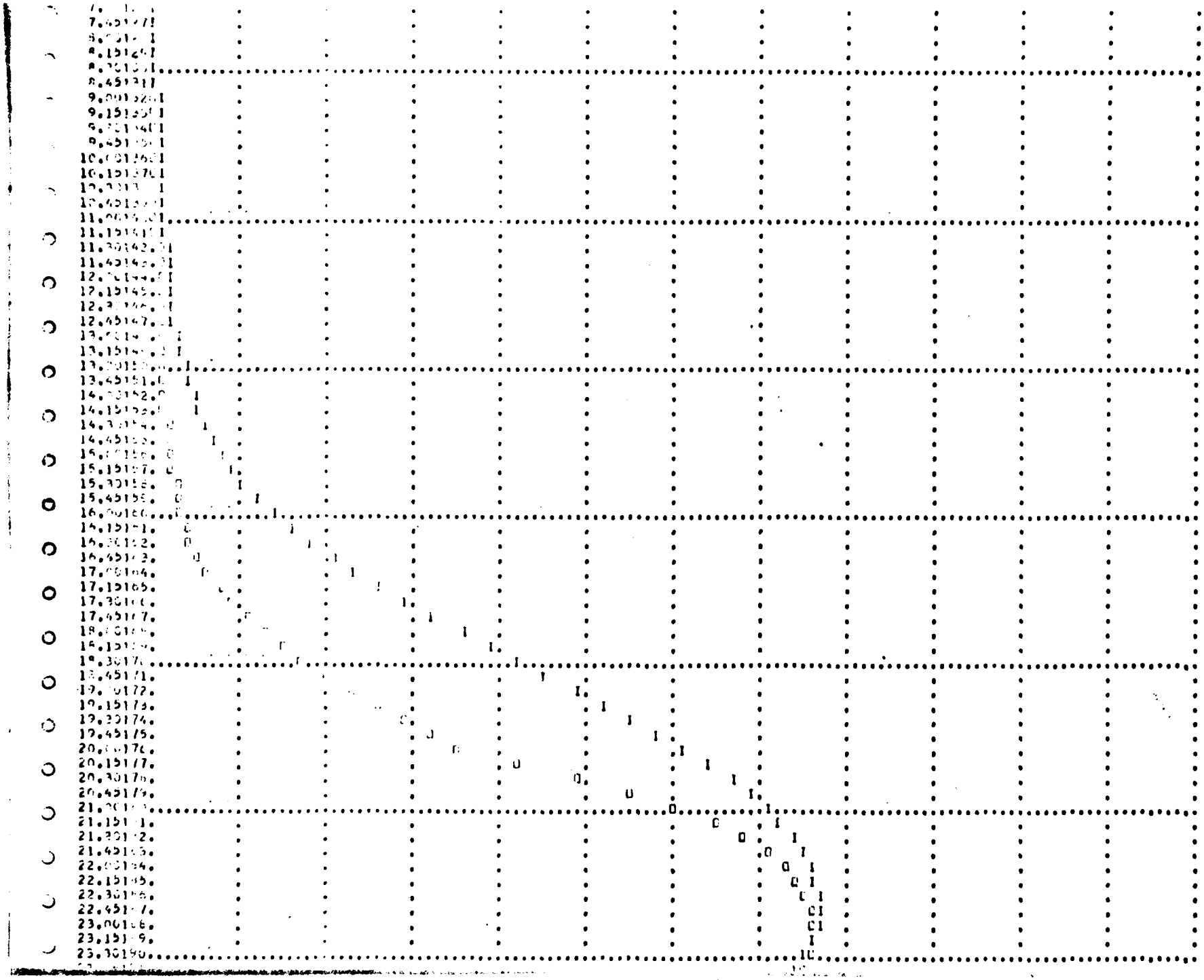
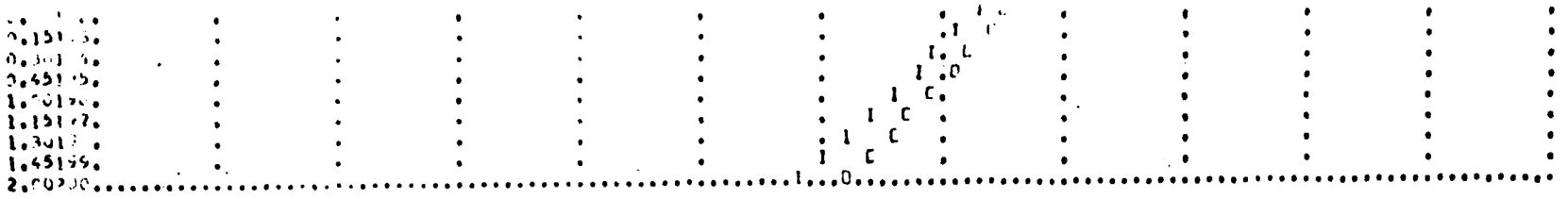






PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOW IN CUBIC METERS PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	PLAN	RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
			.25	.40	0.50	0.60	0.80	1.00
HYDROGRAPH AT	1	1	4772.	8143.	7671.	9217.	12259.	15362.
	(3961.00)		(87.) (	174.07) (	217.51) (	261.01) (	346.01) (	435.01) (
ROUTED TO	1	1	2691.	5355.	6871.	8731.	12112.	15244.
	(3961.00)		(69.41) (	151.63) (	192.59) (	247.23) (	342.96) (	431.67) (

[illegible] SAFETY ANALYSIS

PLAN 1 .....

	SPILLWAY CREST	TOP OF DAM
[illegible]	946.00	947.00
[illegible]	2159.	3922.
[illegible]	0.	6967.

[illegible]	[illegible]	[illegible]	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.5	.25	0.	3010.	2451.	0.	49.50	0.
.6	.3	0.	3663.	5355.	0.	48.75	0.
.8	.4	0.	3893.	6801.	0.	48.75	0.
1.0	.5	.05	4057.	8731.	3.75	48.00	0.
1.5	.75	1.26	4231.	12112.	5.25	47.25	0.
1.75	.75	1.79	4363.	15244.	6.25	47.25	0.

APPENDIX D

REFERENCES

APPENDIX D

REFERENCES

1) U.S. Department of Commerce, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, May 1961.

2) U.S. Department of Commerce, Hydrometeorological Report No. 33, Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian for Areas from 10 to 1,000 Square Miles and Durations of 6, 12, 24, and 48 Hours; April 1956.

3) Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, August 1972 (U.S. Department of Agriculture).

4) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963.

5) T.W. Lambe and R.V. Whitman, Soil Mechanics, John Wiley and Sons, 1965.

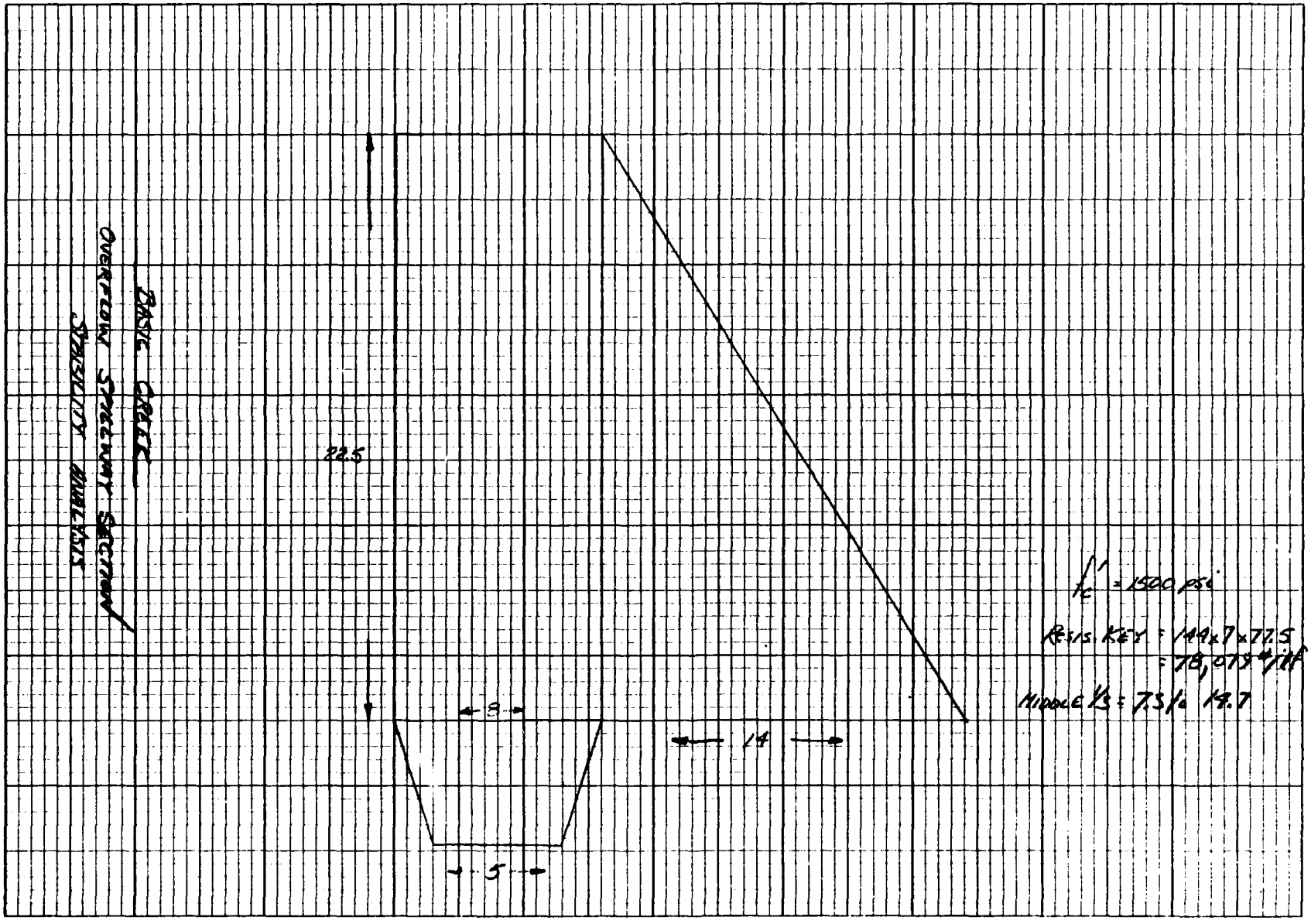
6) W.D. Thornbury, Principles of Geomorphology, John Wiley and Sons, 1969.

7) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.

8) Cornell University Agriculture Experiment Station (compiled by M.G. Cline and R.L. Marshall), General Soil Map of New York State and Soils of New York Landscapes, Information Bulletin 119, 1977.

APPENDIX E

STABILITY ANALYSIS



STABILITY ANALYSIS PROGRAM - WORK SHEET

INPUT ENTRY		ANALYSIS CONDITION 1	2	3	4	5
Unit Weight of Dam (K/ft^3)	0	0.145				
Area of Segment No. 1 (ft^2)	1	157.5				
Distance from Center of Gravity of Segment No. 1 to Downstream Toe (ft)	2	9.333				
Area of Segment No. 2 (ft^2)	3	180.				
Distance from Center of Gravity of Segment No. 2 to Downstream Toe (ft)	4	18.				
Area of Segment No. 3 (ft^2)	5	30				
Distance from Center of Gravity of Segment No. 3 to Downstream Toe (ft)	6	18.				
Base Width of Dam (Total) (ft)	7	22.				
Height of Dam (ft)	8	22.				
Ice Loading (K/L ft.)	9		7.5			
Coefficient of Sliding	10	0.7				
Unit Weight of Soil (K/ft^3) (deduct 18)	11	.145				
Active Soil Coefficient - Ka	12	0				
Passive Soil Coefficient - Kp	13	3.0				
Height of Water over Top of Dam or Spillway (ft)	14	0	7	9		
Height of Soil for Active Pressure (ft)	15	0				
Height of Soil for Passive Pressure (ft)	16	4.5				
Height of Water in Tailrace Channel (ft)	17	0	3.5	4.5		
Weight of Water (K/ft^3)	18					
Area of Segment No. 4 (ft^2)	19					
Distance from Center of Gravity of Segment No. 4 to Downstream Toe (ft)	20					
Height of Ice Load or Active Water (ft) (does not include 14)	46	22.5	20	22.5	22.5	22.5
Seismic Coefficient (g)	50	0.0	0.0	0.0	0.0	0.1
Resistance of KEY K/ft	58	78				
RESULTS OF ANALYSIS						
Factor of Safety vs. Overturning		2.23	1.77	1.62	1.51	2.13
Distance From Toe to Resultant		11.2	8.4	8.3	7.5	10.7
Factor of Safety vs. Sliding		6.89	5.51	4.20	3.78	4.76

BASIC CREEK DAM
STABILITY ANALYSIS
SPILLWAY SECTION

Case I Normal Loading

(a) 2.225835[illegible]

(b) 11.17449[illegible]

(c) 6.894259[illegible]

Case II Ice Loading

(a) 1.767039[illegible]

(b) 8.425600[illegible]

(c) 5.510311[illegible]

Case III 1/2 PMF

(a) 1.623778[illegible]

(b) 8.327770[illegible]

(c) 4.199170[illegible]

Case IV PMF

(a) 1.508[illegible]

(b) 7.452907[illegible]

(c) 3.776[illegible]

Case V Seismic Loading

(a) 2.125428[illegible]

(b) 10.74384[illegible]

(c) 4.760351[illegible]

NOTE: (a) is the factor of safety for overturning;

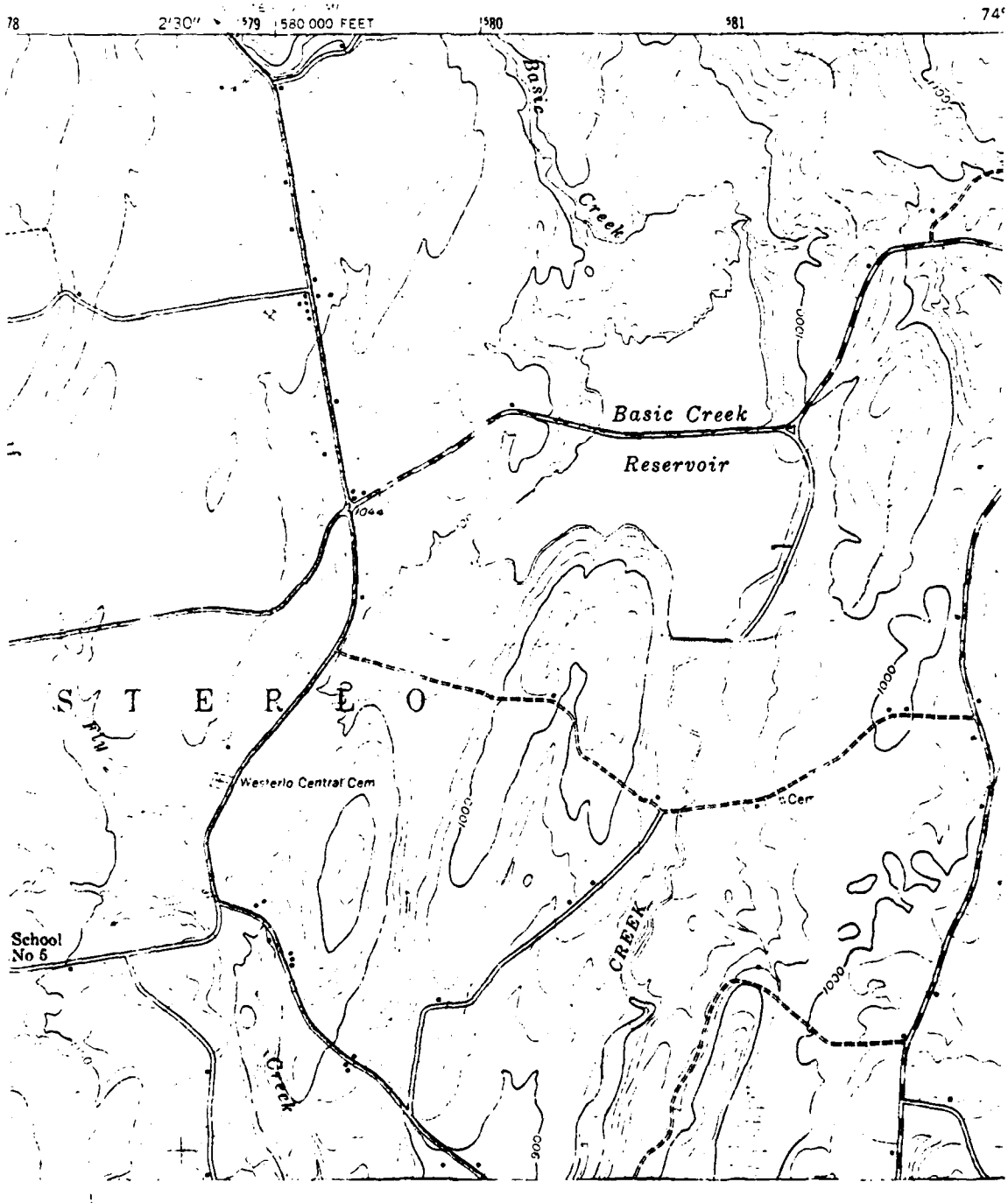
(b) is the location of the resultant from the toe;

(c) is the factor of safety for sliding.

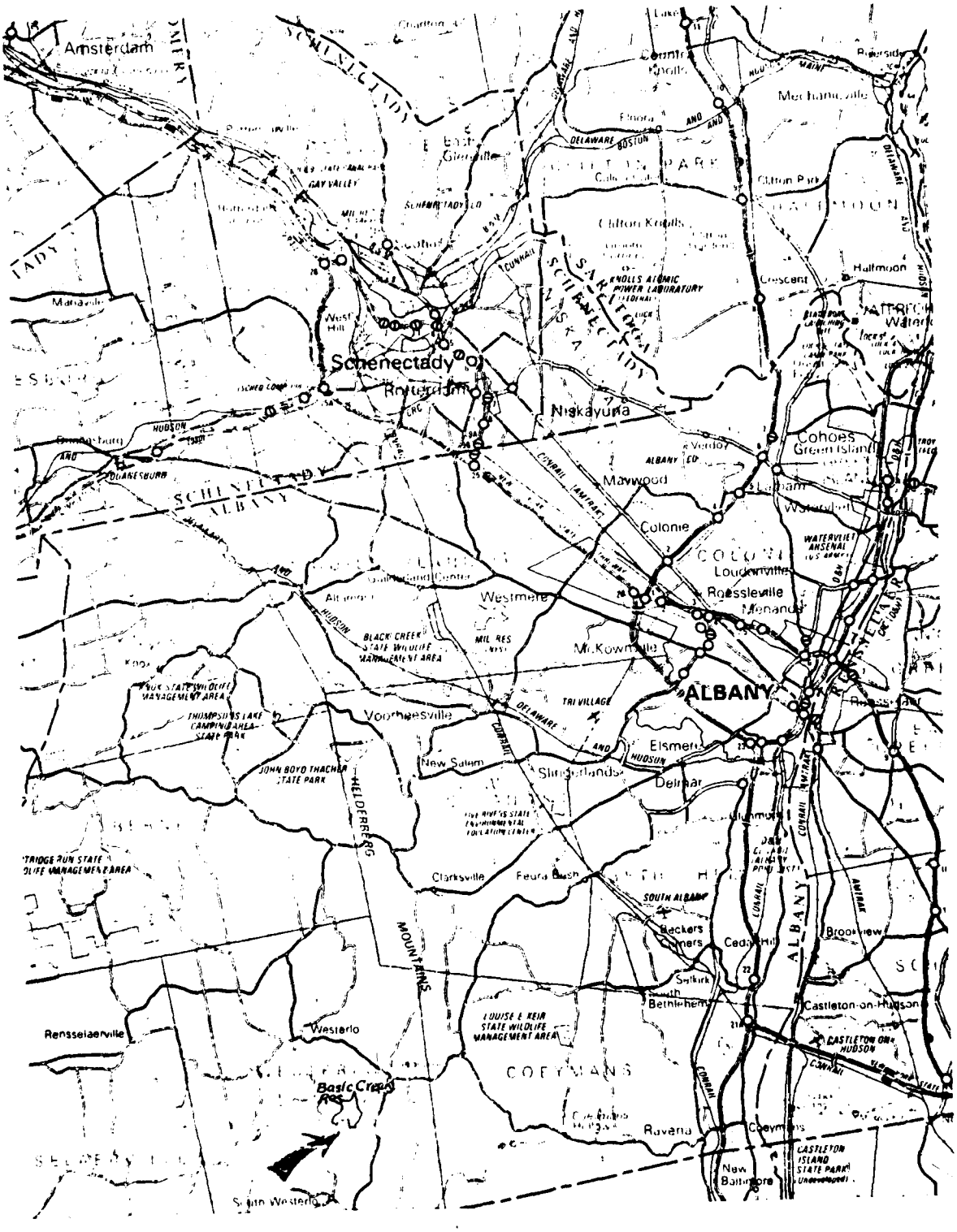
APPENDIX F

DRAWINGS

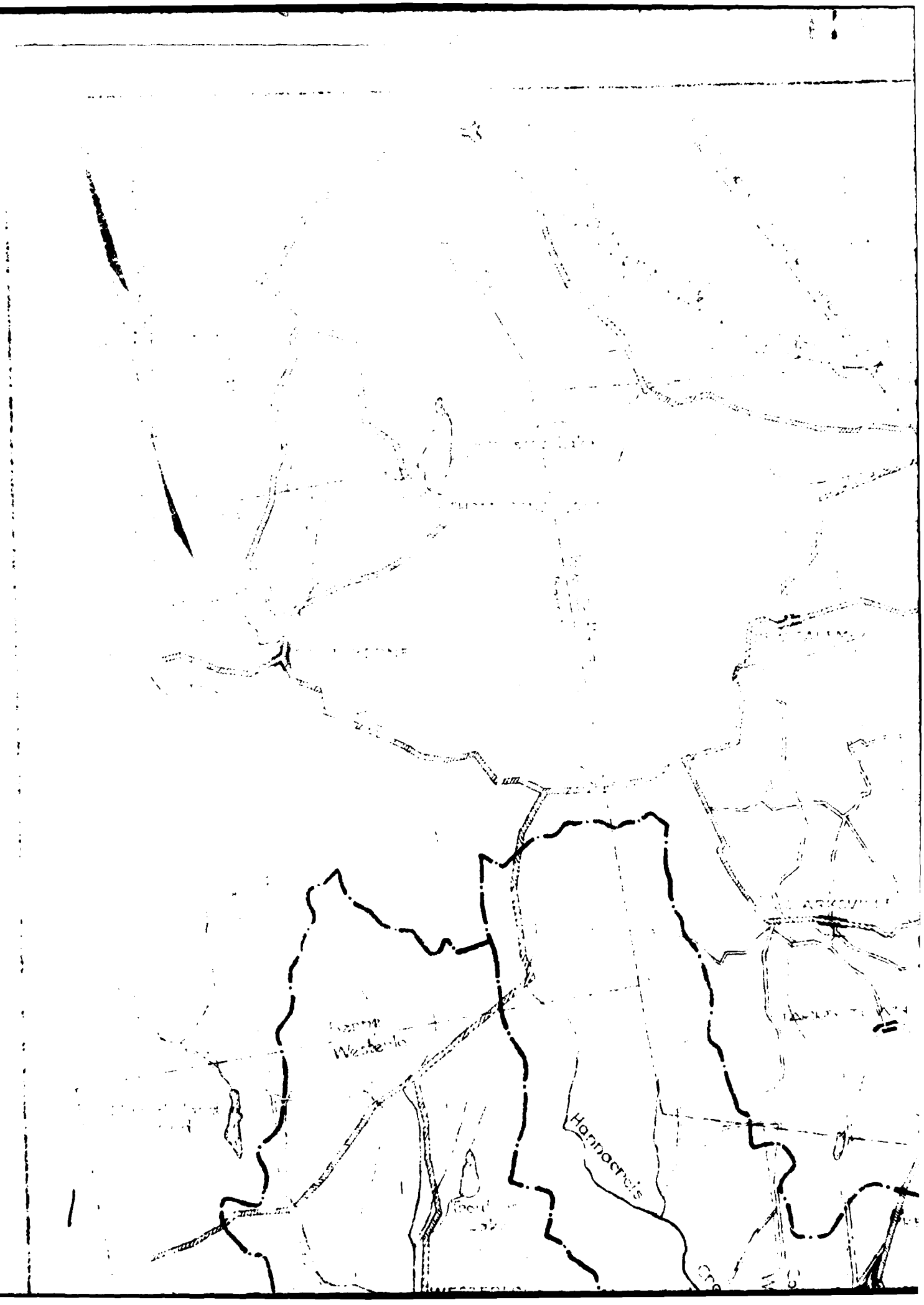
GREENVILLE QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)



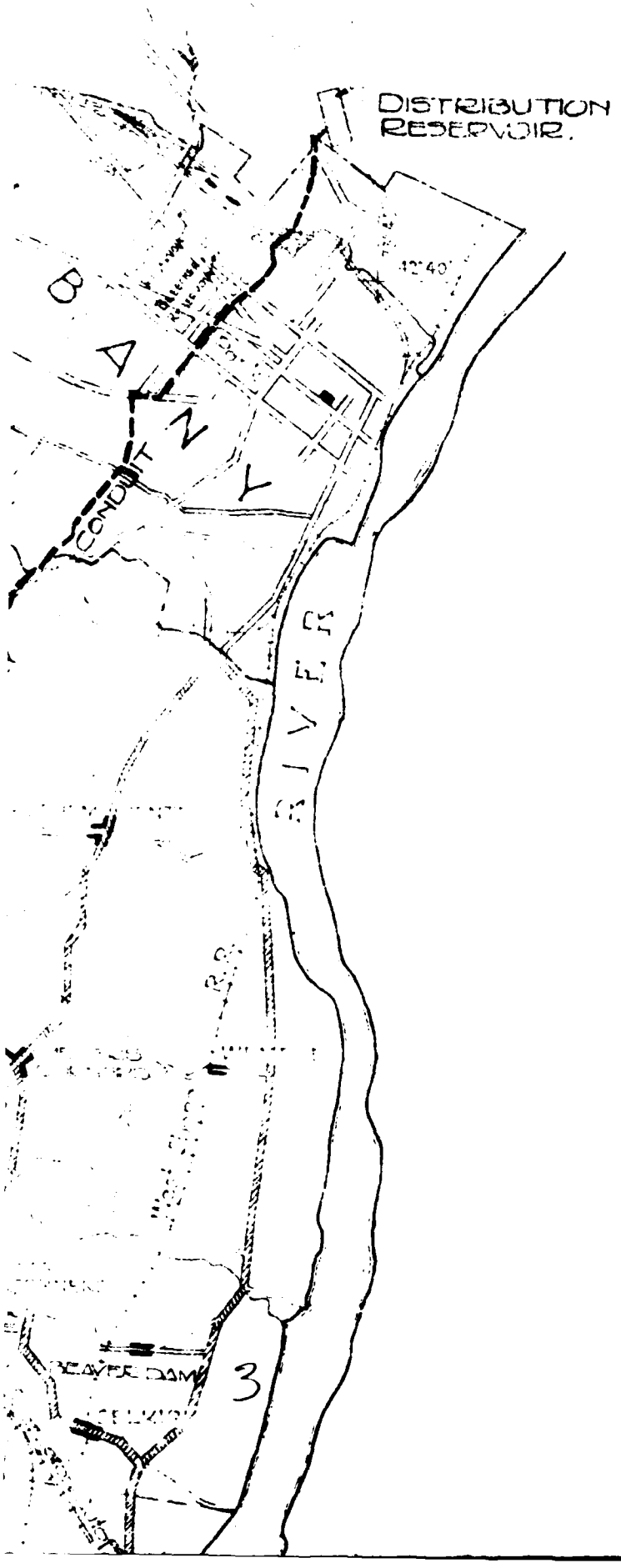
TOPOGRAPHIC MAP



VICINITY MAP


Hannacroix


ALBANY
CONDUIT
SUPPLY
RIVER
FILTRATION PLANT
SOUTH ALBANY
New Scotland
Cocymans
2
3
BEAVER DAM
R.R.



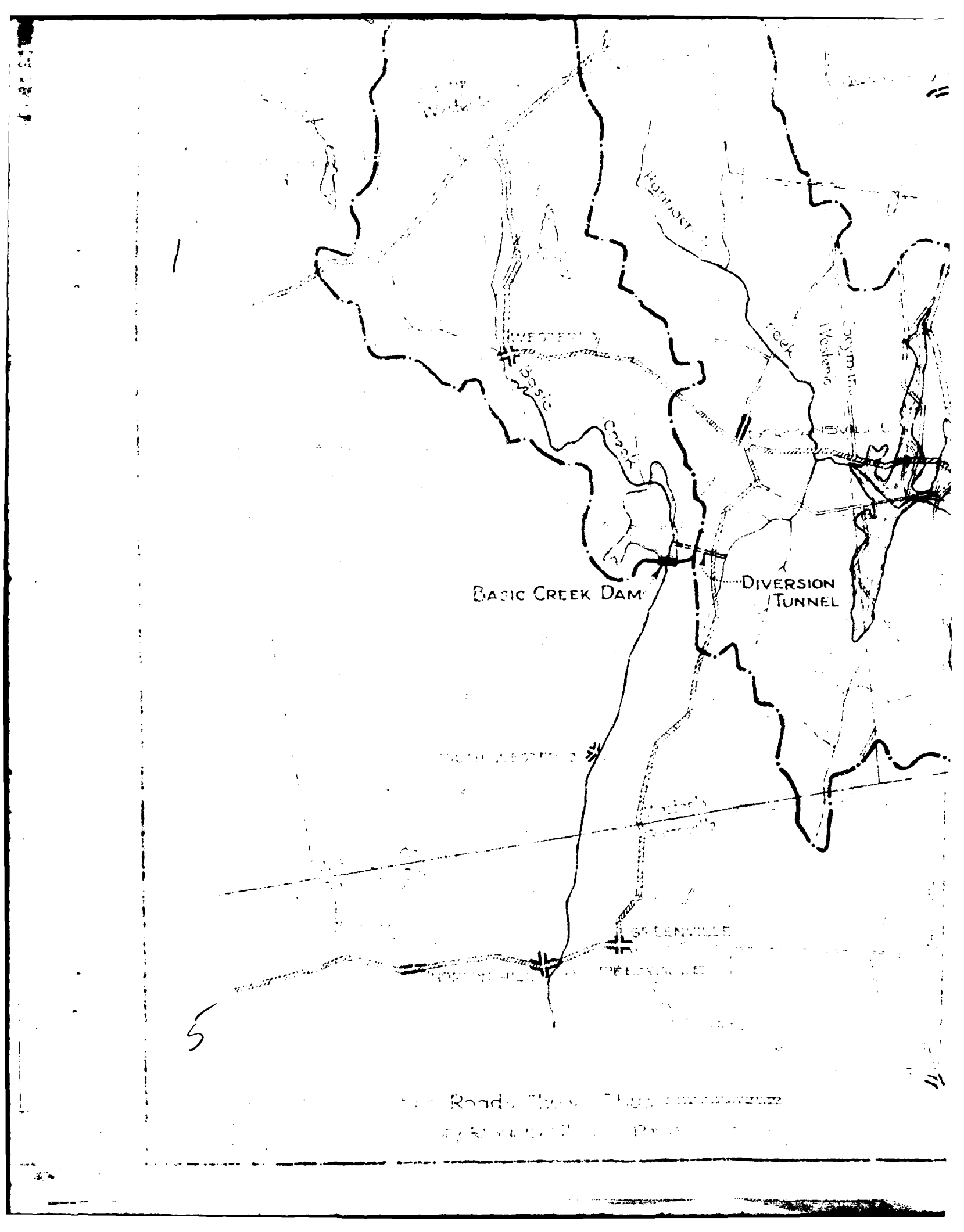
CITY OF ALBANY

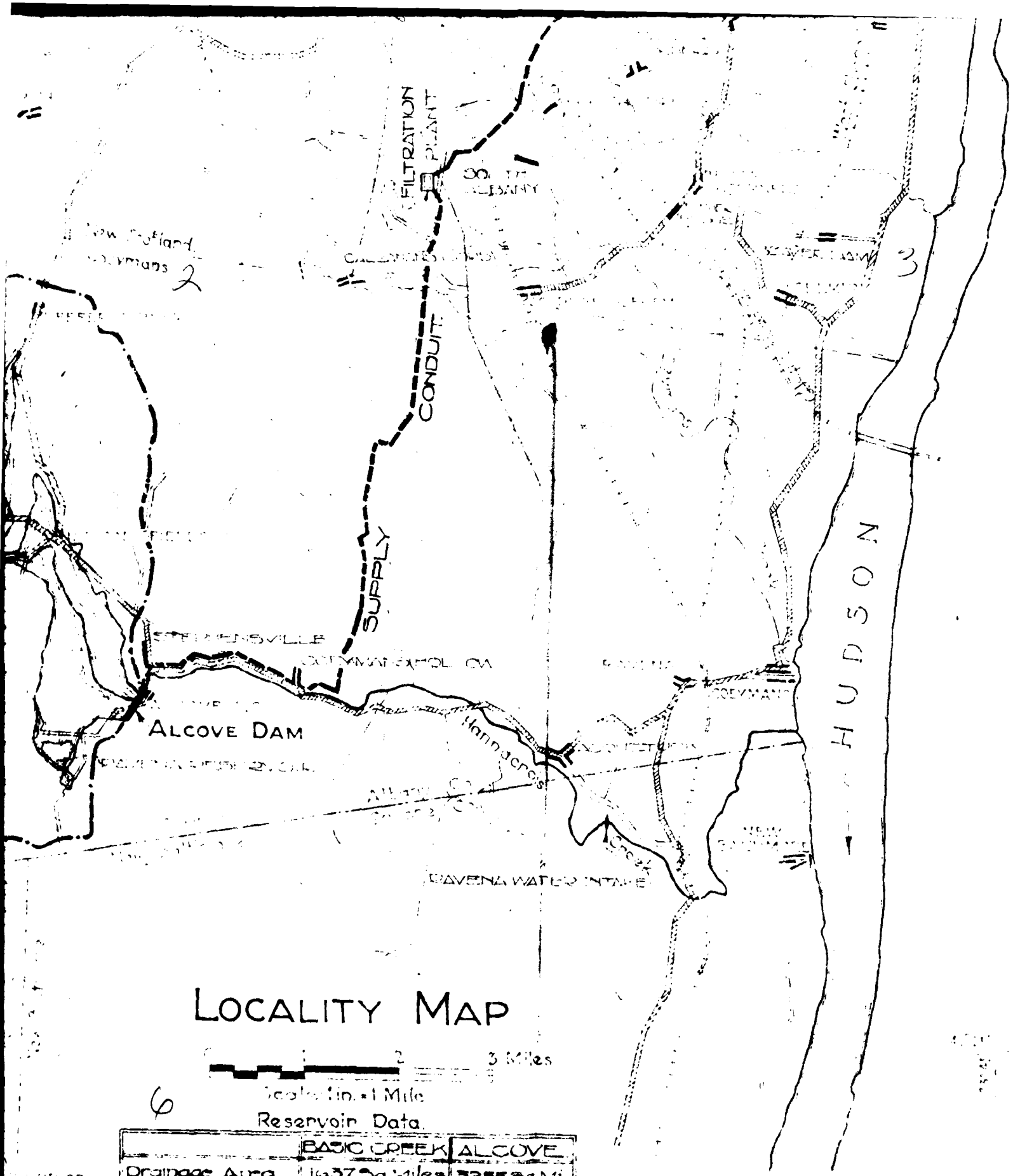
BOARD OF WAT

WHITMAN, REQUARDT AND SMITH

OF ALBANY, NEW YORK

OF WATER SUPPLY


Basic Creek
Basic Creek
Jocassee
Reservoir
BASIC CREEK DAM
DIVERSION TUNNEL
GREENVILLE



LOCALITY MAP

Scale: 1in. = 1 Mile

6

Reservoir Data.

	BASIC CREEK	ALCOVE
Drainage Area.	1637 Sq. Miles	3255 Sq. Mi.
Elev. Flow Line	940	618
Area at Flow Line	265 Acres	1440 Acres
Storage	0.67 Billion Gal.	6.1 Billion Gal.

4

SECTION NO.1
CONTRACT NO.1

BASIC CREEK DAM

February 25, 1928

CONTRACT DRAWINGS IN THIS SET	
NAME	SHEET NUMBER
Location Map	1
[illegible]	2
[illegible]	3
[illegible]	4
[illegible]	5
[illegible]	6

7

4

SECTION NO:

CONTRACT NO:

C CREEK DAM

May 25, 1965

ACT DRAWINGS IN THIS SET

NAME	SHEET NO	FILE
	1	
	2	
	3	
	4	
	5	
	6	

8

DRAINAGE AREA - 16.37 SQ.

RESERVOIR FLOW LINE - ELEV.
TOP OF EMBANKMENT - ELEV.

RESERVOIR AREA AT FLOW LINE =
VOLUME BETWEEN TUNNEL INVERT ELEV. 925.0 & FLOW LINE E

OVERALL LENGTH OF DAM
LENGTH OF EMBANKMENT SE
MAXIMUM HEIGHT ABOVE GROUND SU
LENGTH OF SPILLWAY = 100
MAXIMUM HEIGHT ABOVE NATURAL ROCK S

SPILLWAY CAPACITY/WATER SURFACE AT ELEV. 945.5 FT. DEPTH
= 414

CAPACITY OF SPILLWAY WASTE CHA
AT 2 FT. DEPTH = APPROX. 26
" 4 " " = " 87
" 6 " " = " 181
" 8 " " = " 377

DESIGN OF SPILLWAY SECT
MASONRY - 145 #/CU. FT.

UPLIFT - 33⅓% OF FULL HEAD AT
DECREASING UNIFORMLY TO ZERO

RESERVOIR DESIGNED AS A DETENTION RESERVOIR
FOR ICE PRESSURE, BUT SPILLWAY SECTION WILL W
OF 5300 #/LIN FT AND KEEP RESULTANT WITHIN

SQ. MI.

EL. 940.00
EV. 946.50

= 265 ACRES
FT. EL. 940 = 870,000,000 GALLONS

FT.
N = 762 FT.
SURFACE = 21 FT.
100 FT.
K SURFACE = 17.50 FT.

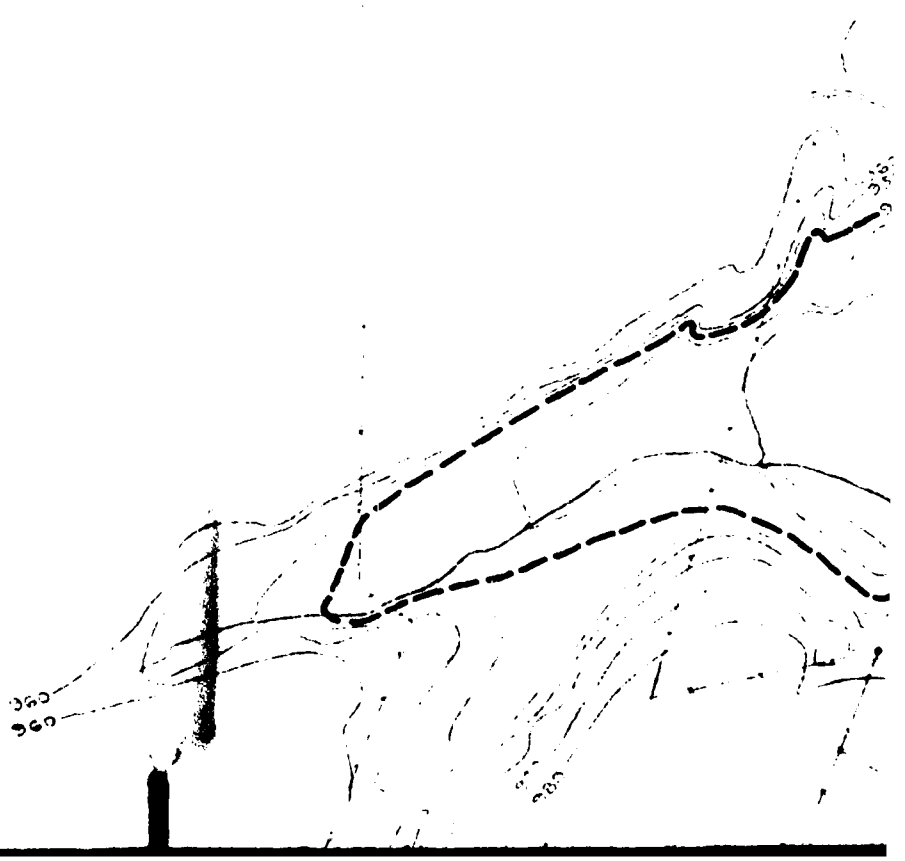
EPTH, 1½ FT. FREEBOARD. WITH C = 3.70)
4144 C.F.S. = 253 C.F.S. PER SQ. MI.

CHANNEL (N = .025)
260 C.F.S.
870 "
1810 "
3770 "

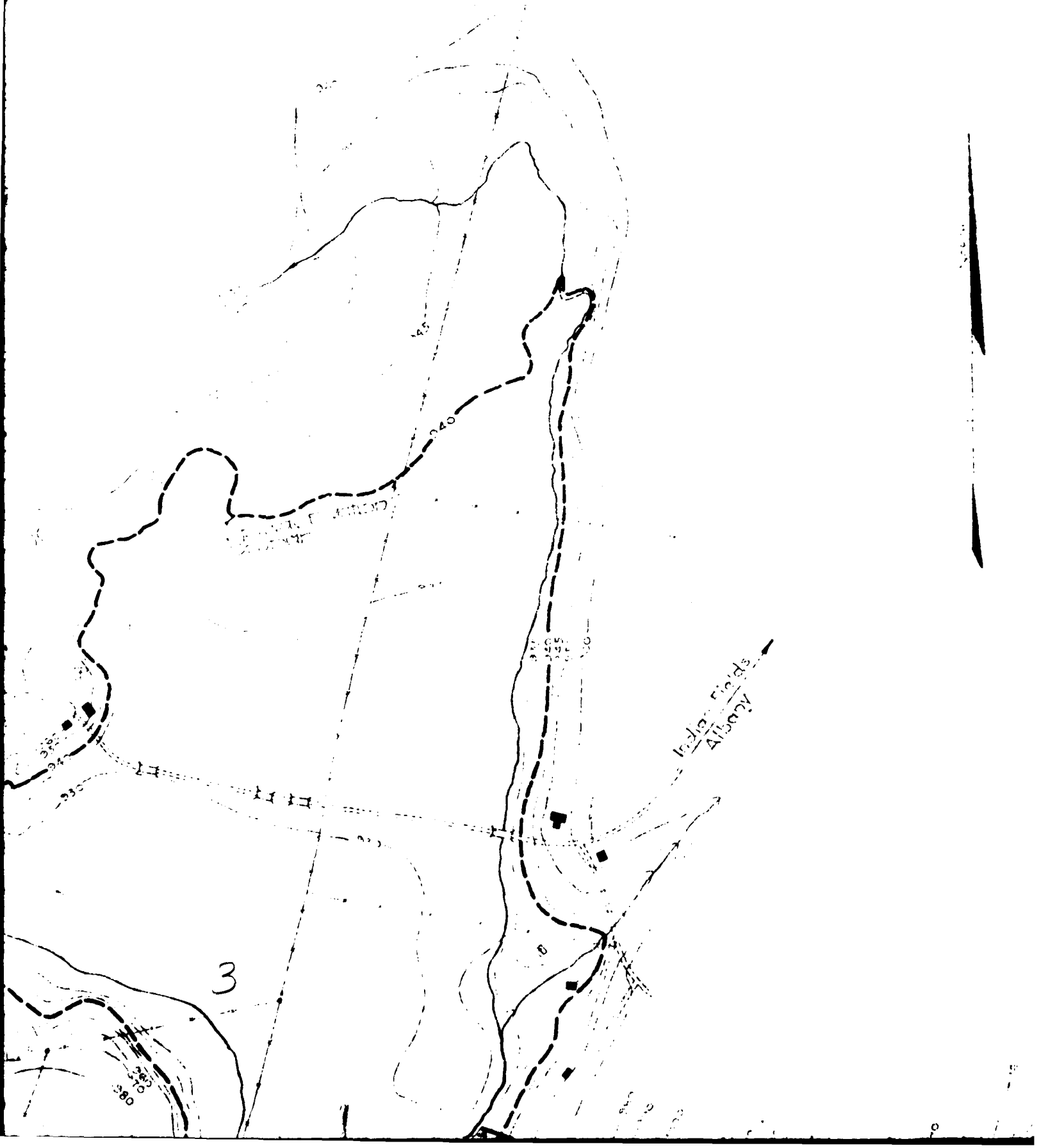
SECTION
FT.

D AT HEEL
ZERO AT TOE

2



VOIR ONLY WITH NO ALLOWANCE
L WITHSTAND TOP THRUST
THIN MIDDLE 3RD.


240
Indian Fields
Albany
3

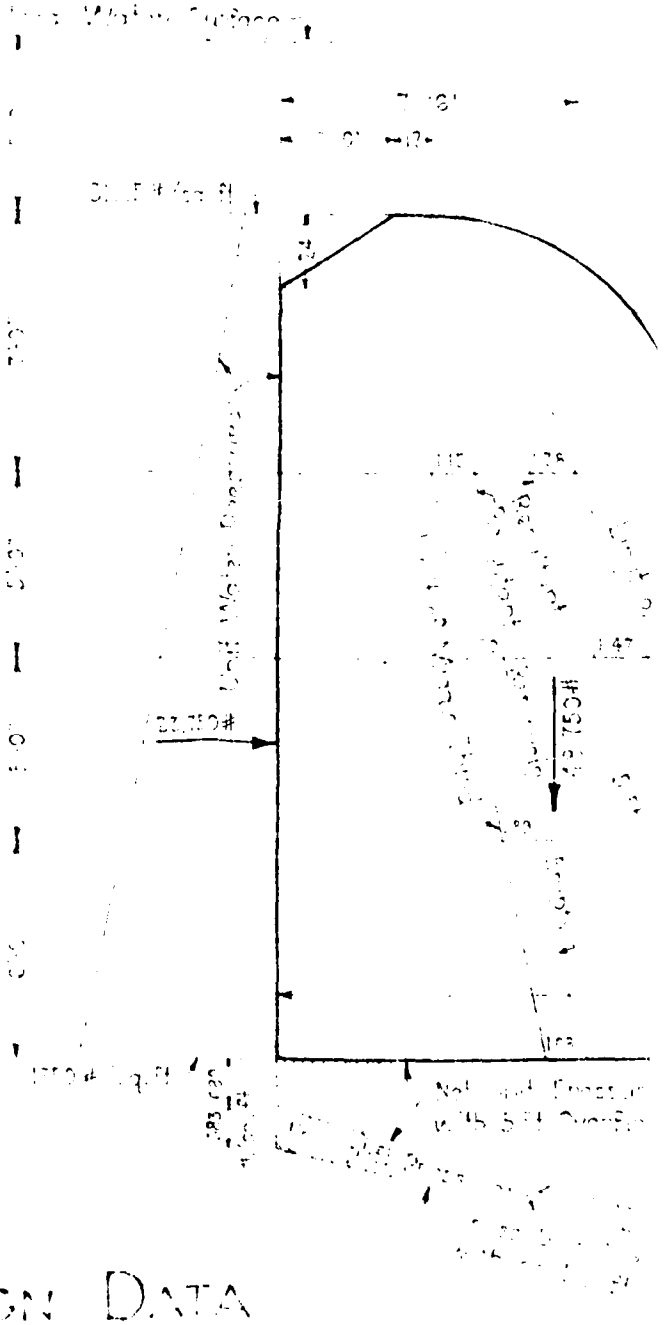
Indian Fields
Albany

DESIGN OF SPILLWAY SECTIO

MASONRY - 145 #/CU. FT.

UPLIFT - 33⅓% OF FULL HEAD AT
DECREASING UNIFORMLY TO ZERO A

RESERVOIR DESIGNED AS A DETENTION RESERVOIR ON
NO ICE PRESSURE, BUT SPILLWAY SECTION WILL WIT
AT [illegible] LBS PER SQ. FT. AND KEEP RESULTANT WITHIN



5

DESIGN DATA
BASIC CREEK DAM AND RESERVOIR

CTION

T

AT HEEL

ERO AT TOE 2

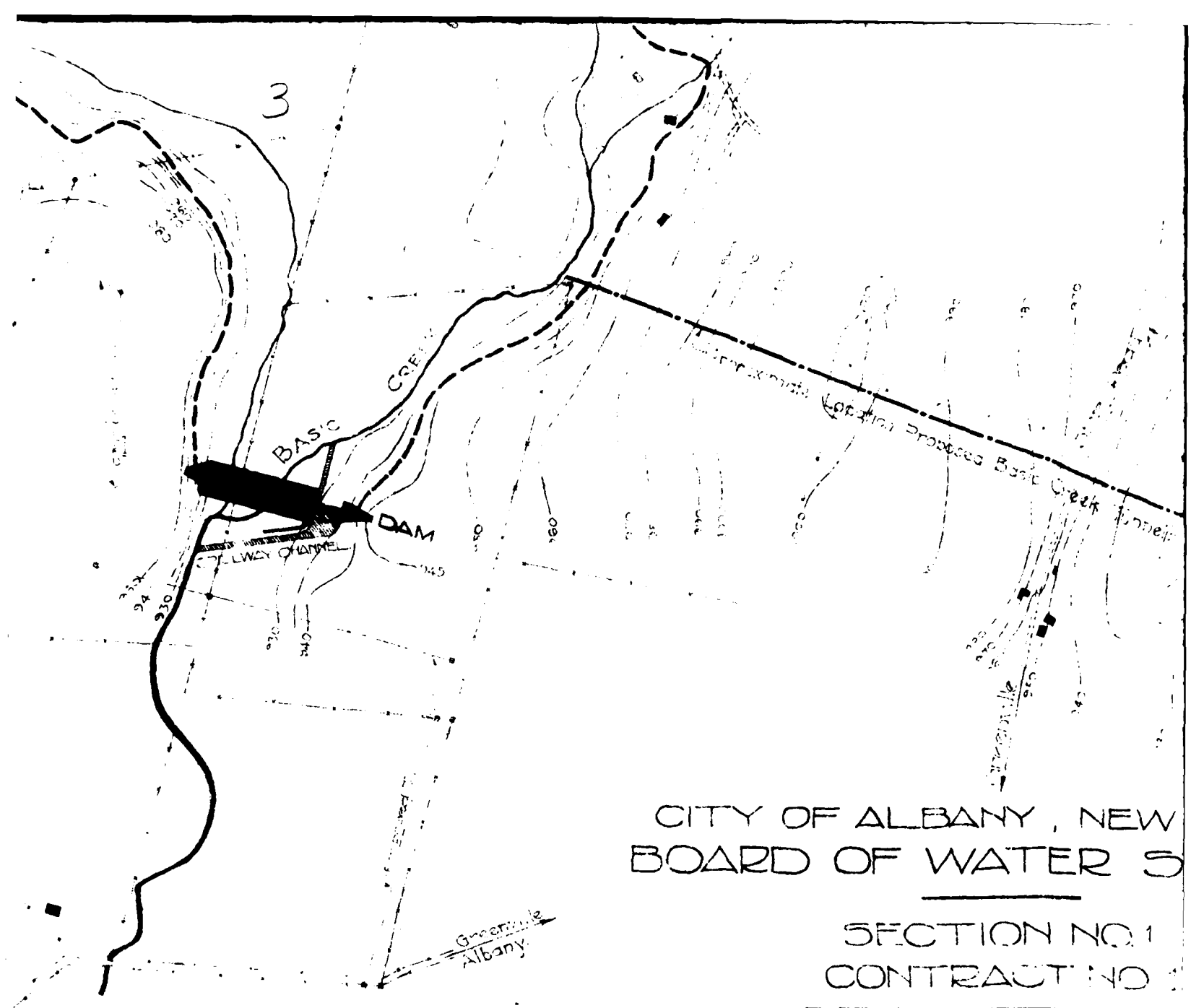
R ONLY WITH NO ALLOWANCE

WITHSTAND TOP THRUST

IN MIDDLE 3RD.

TOPOGRAPHIC MAP O

Scale: 1 in



CITY OF ALBANY, NEW

BOARD OF WATER S

SECTION NO. 1

CONTRACT NO 1

BASIC CREEK D

TOPOGRAPHY OF RES
AND DESIGN D

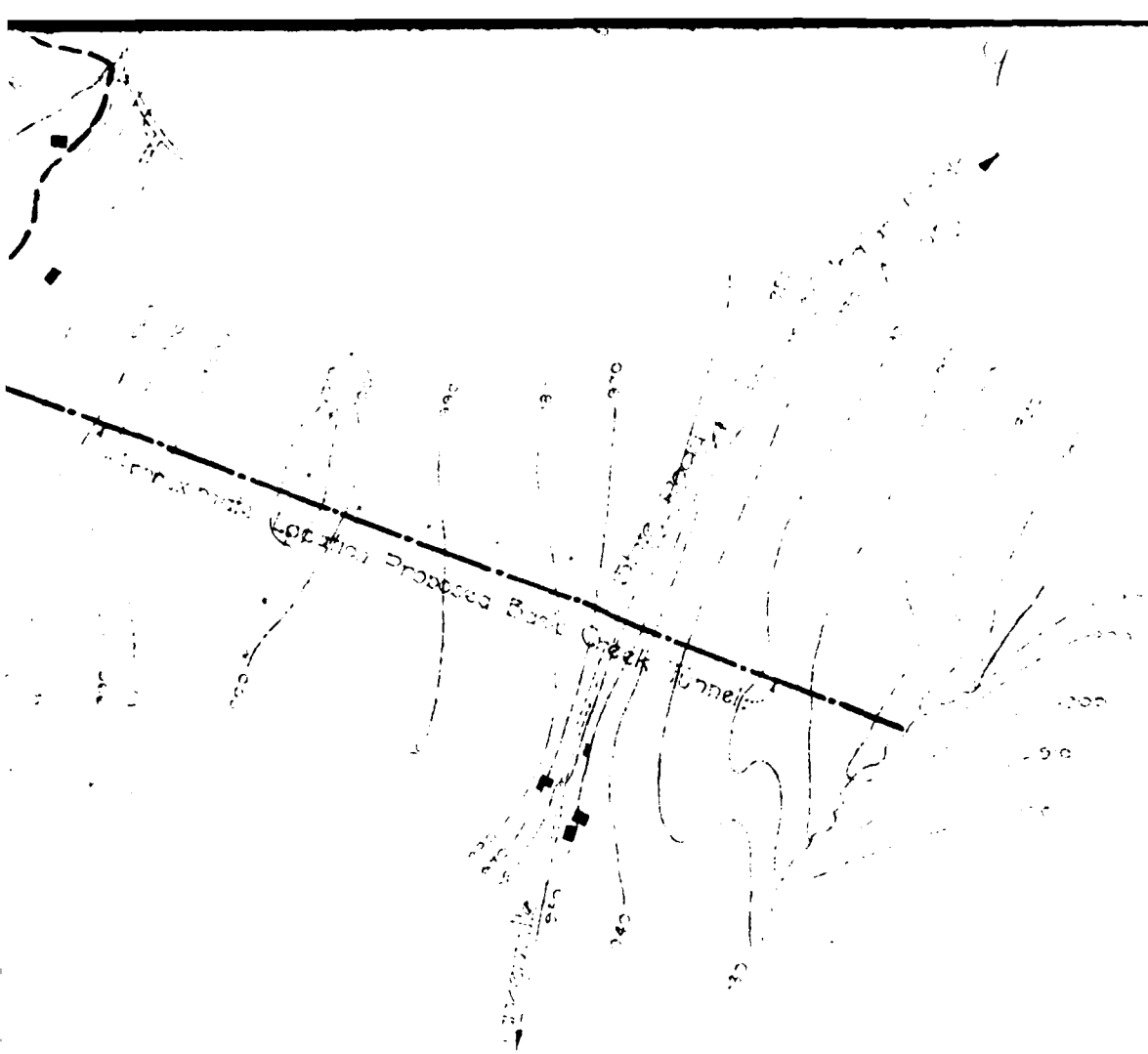
7

AP OF RESERVOIR AREA

WHITMAN, HOWARD & TURNER

Engineers

Sheet No. 2



CITY OF ALBANY, NEW YORK.

BOARD OF WATER SUPPLY.

SECTION NO. 1

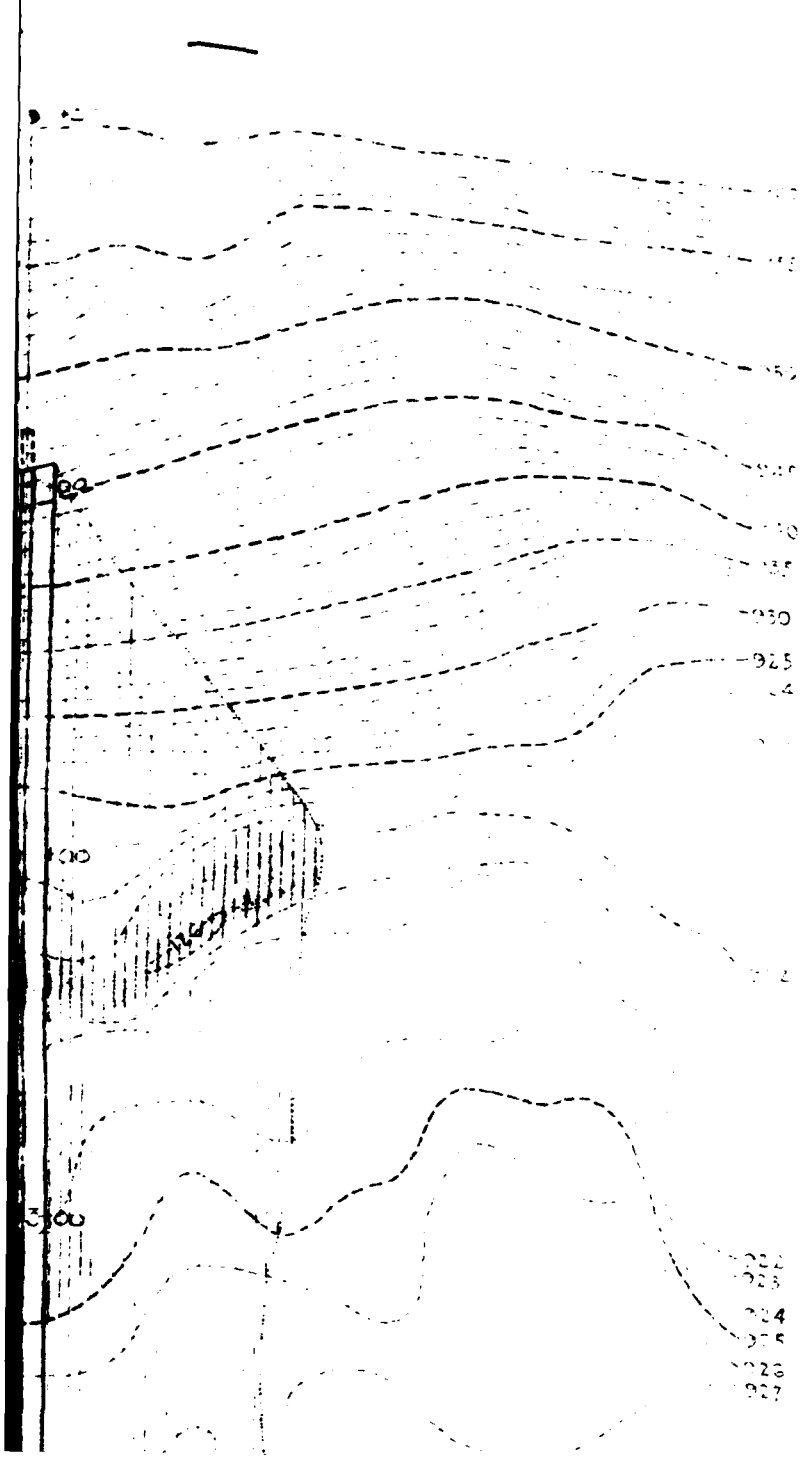
CONTRACT NO. 1.

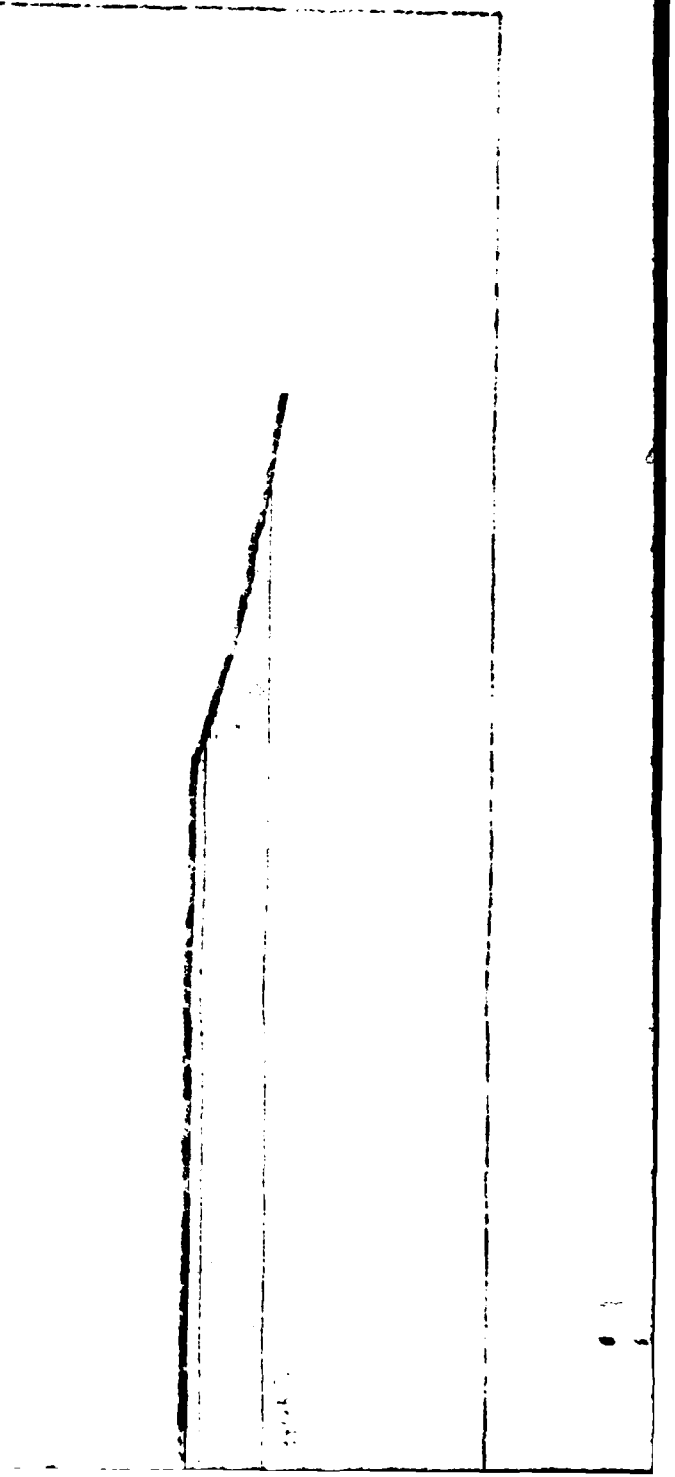
BASIC CREEK DAM.

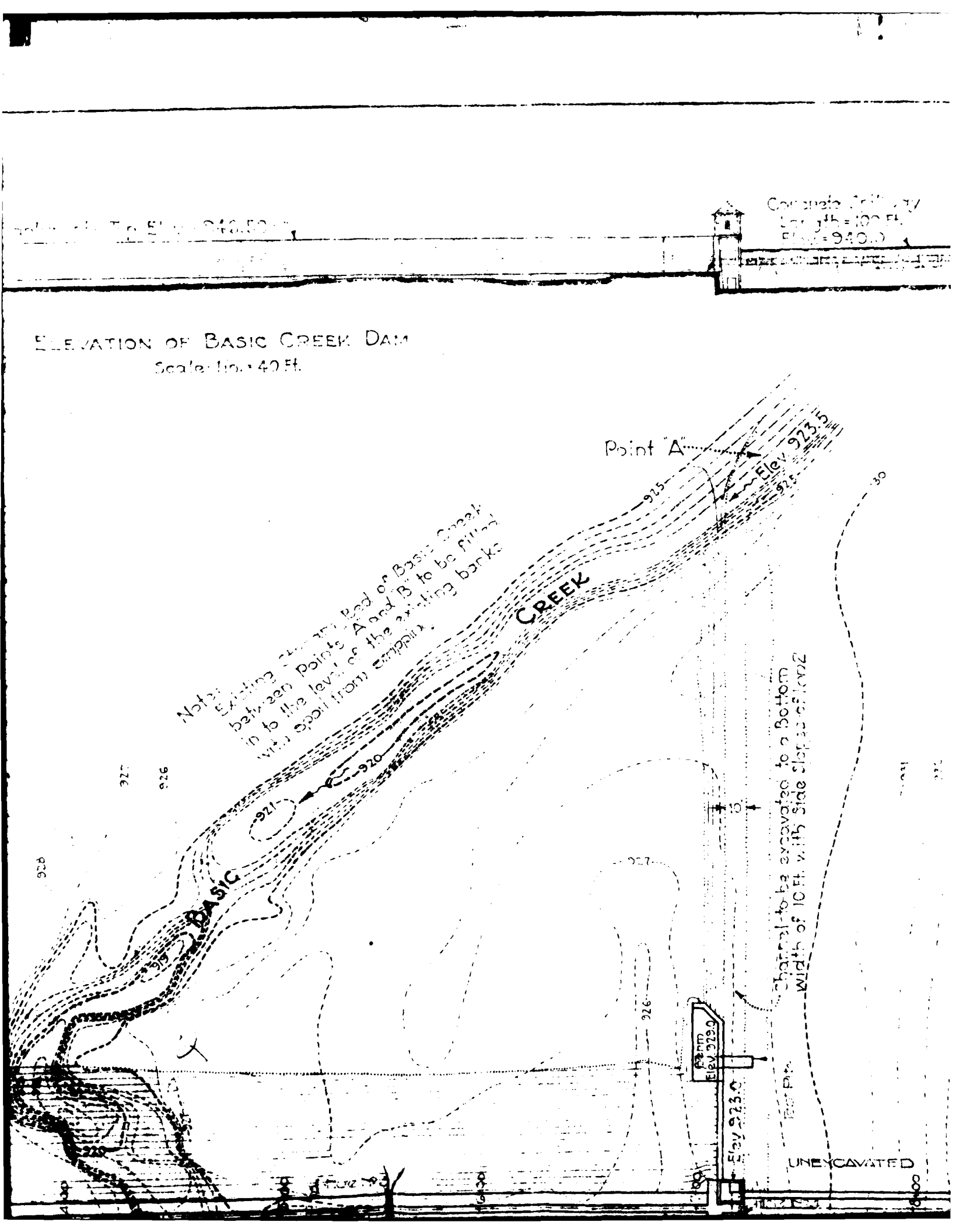
OPOGRAPHY OF RESERVOIR

AND DESIGN DATA.

8


930
925

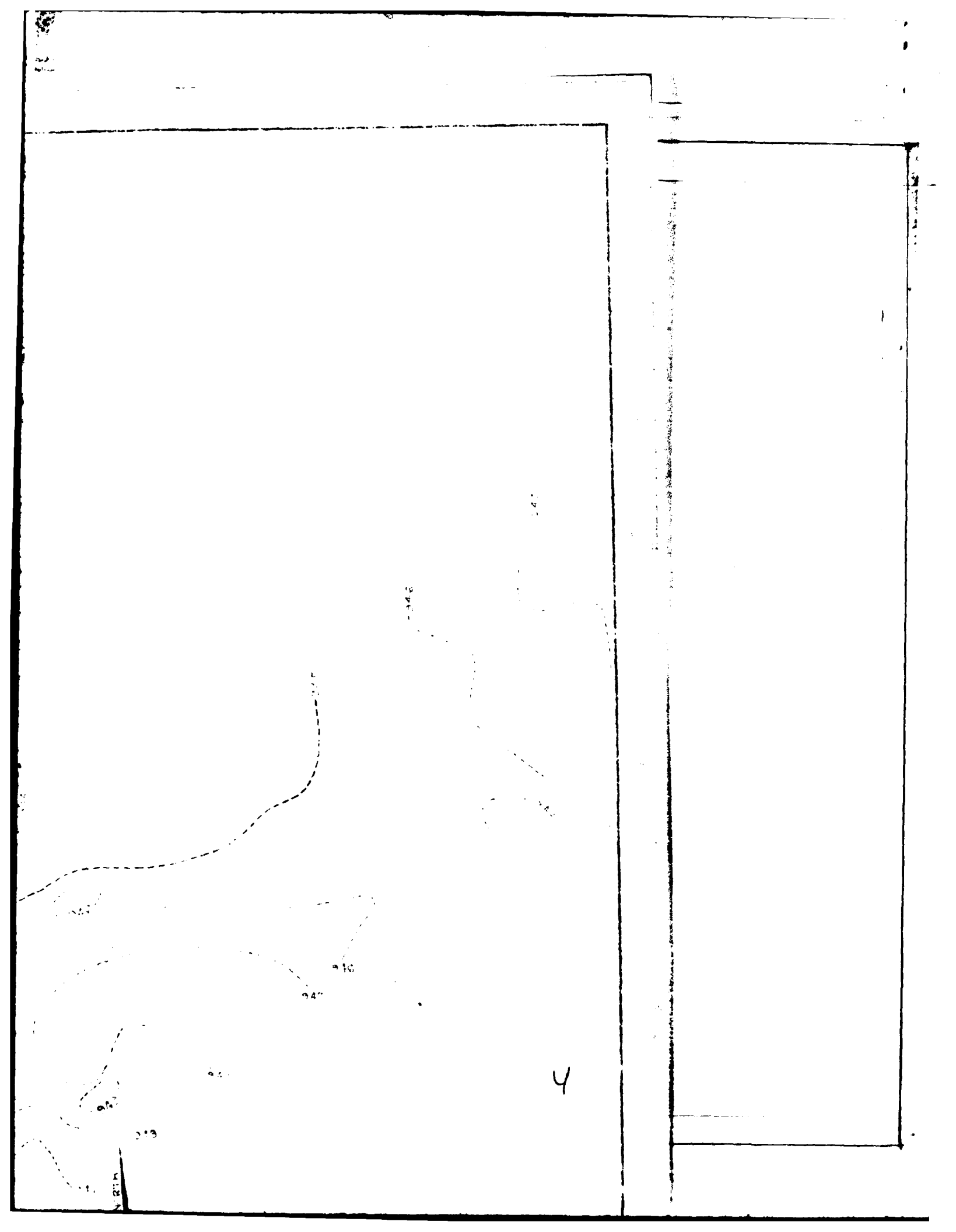




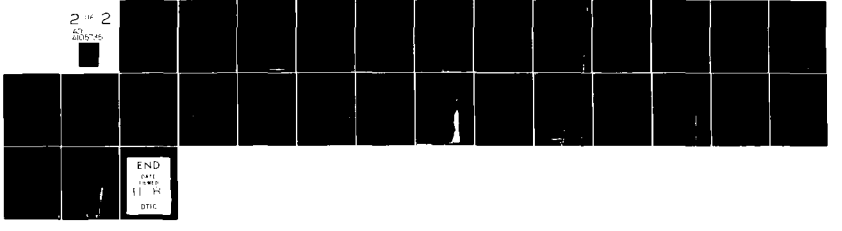
ELEVATION OF BASIC CREEK DAM

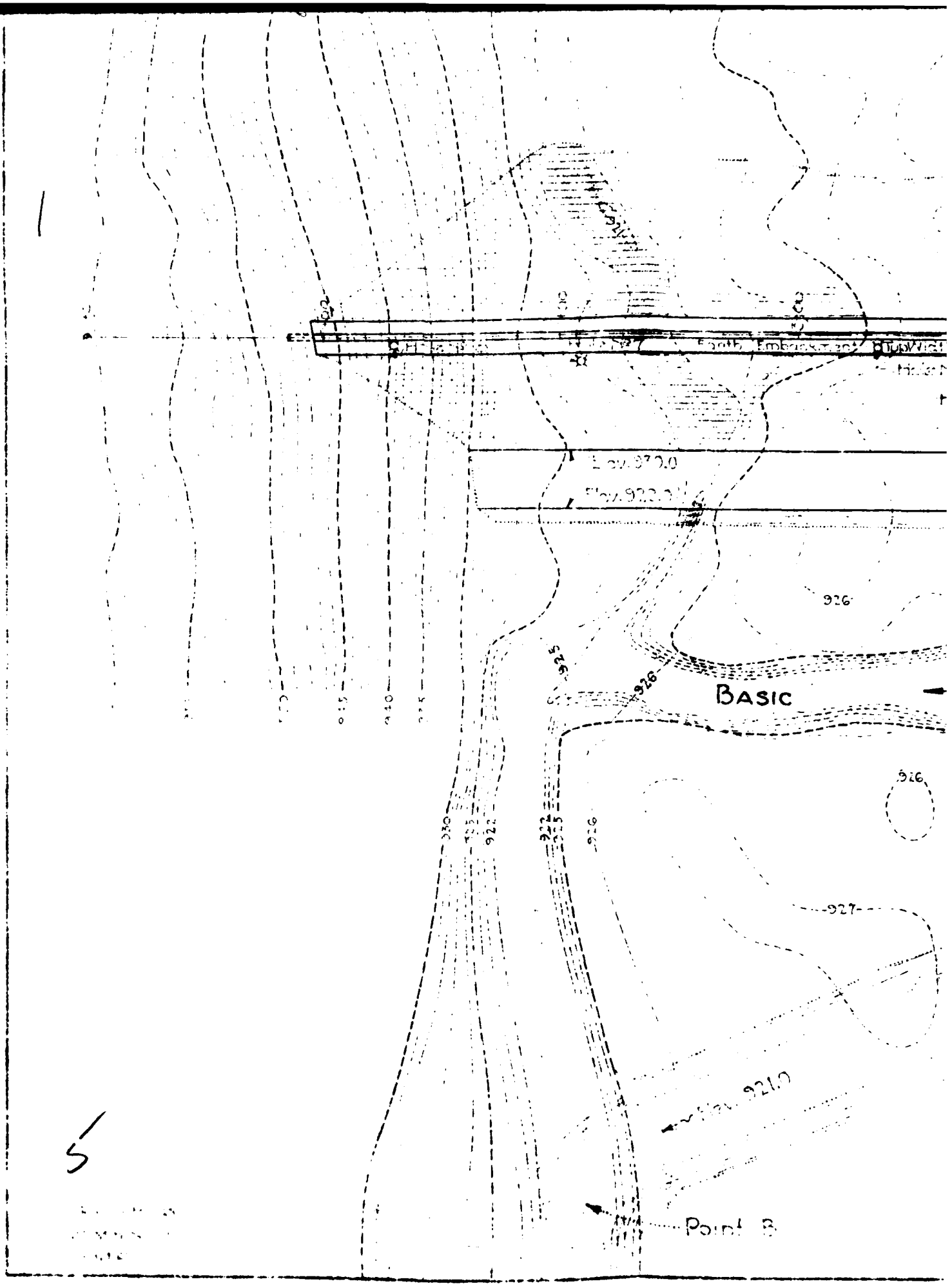
Scale: Hor. = 40 Ft.

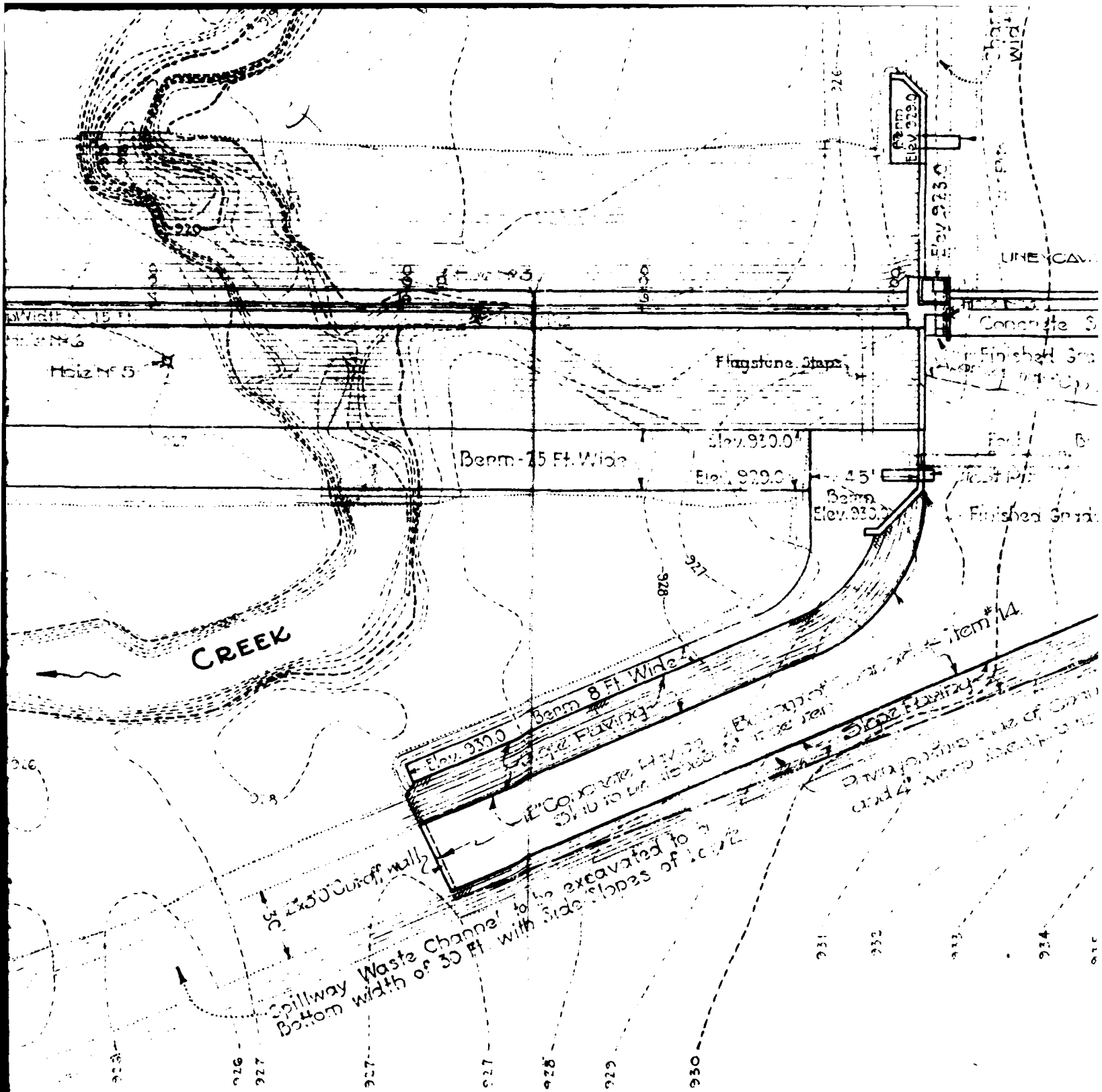
Earth Embankment
935
937
939
940
941
942
944
940
940
943
943
NORTH
Earth Embankment to be Wasted



AD-A105 735 NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/G 13/13
NATIONAL DAM SAFETY PROGRAM. BASIC CREEK DAM (INVENTORY NUMBER --ETC(U)
FEB 81 G KOCH DACW51-79-C-0001
UNCLASSIFIED NL



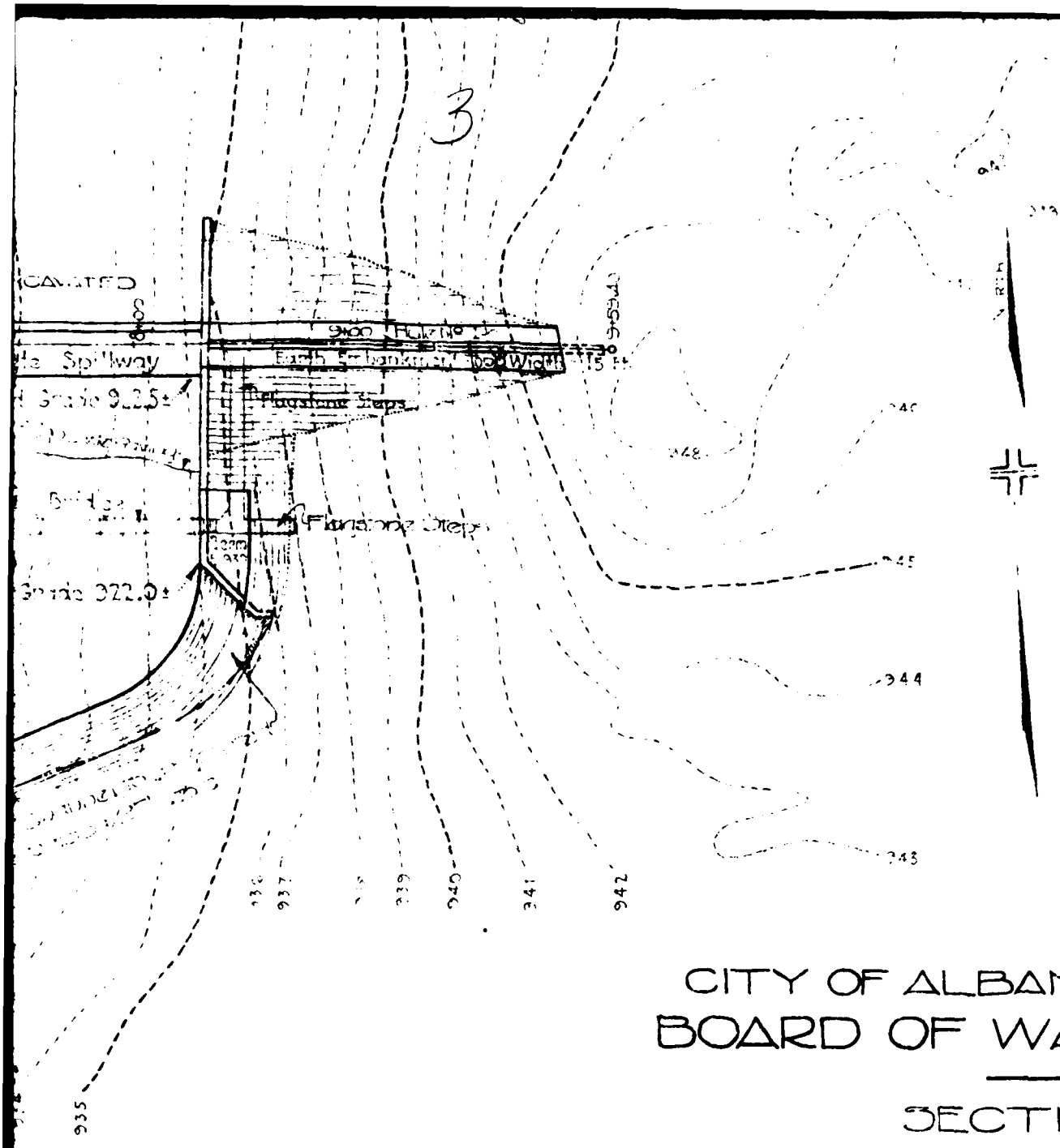

1
5
BASIC
926
927
Point B



LOCATION PLAN OF BASIC CREEK DAM

Scale : 1 in. = 40 Ft.

6



CITY OF ALBANY, NEW
BOARD OF WATER SU

SECTION NO. 1
CONTRACT NO. 1

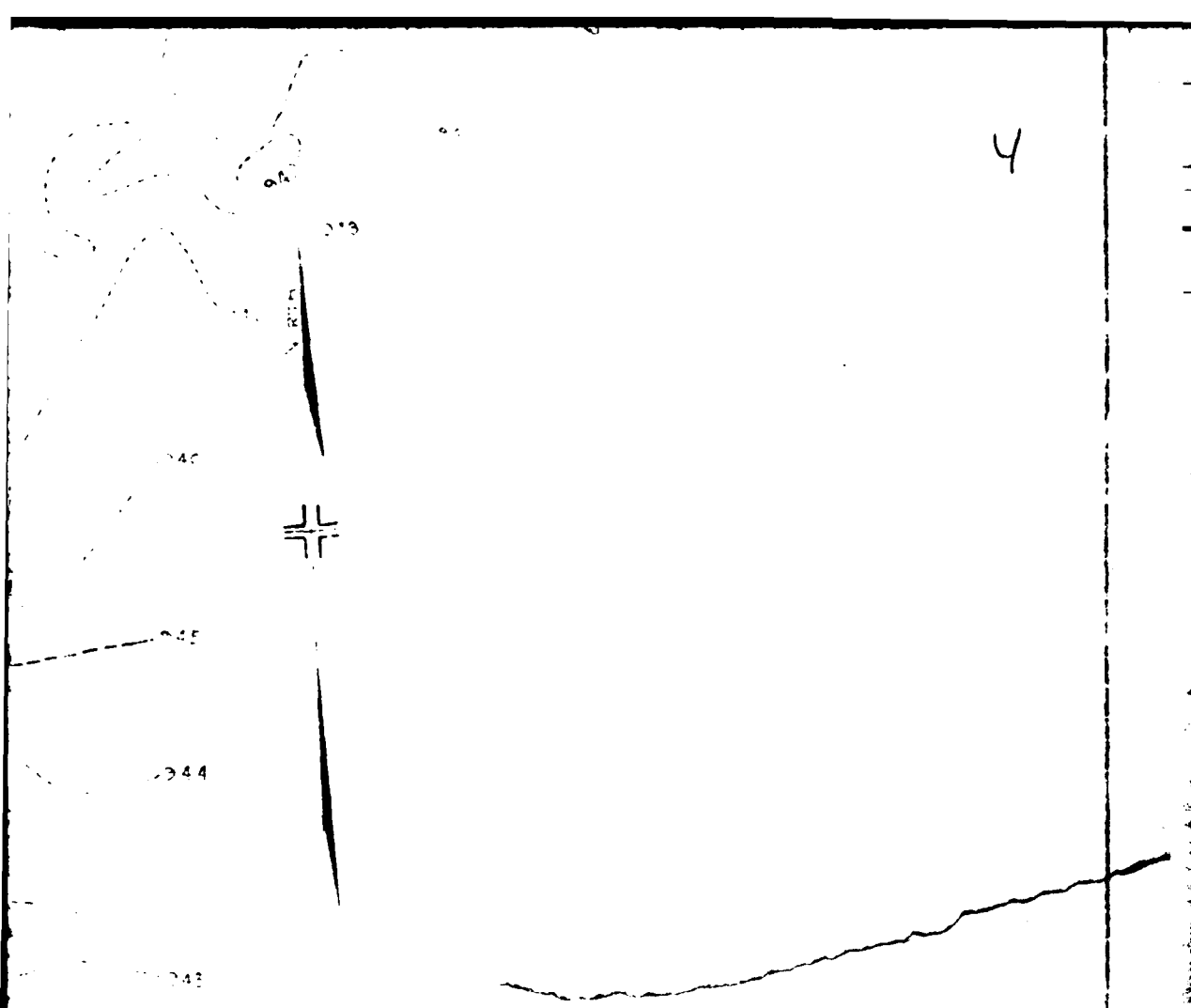
BASIC CREEK DA

LOCATION PLAN AND ELE

7

WHITMAN REQUARDT AND SMITH
ENGINEERS
SCALE 1"=40'

Sheet No 3.



4

TY OF ALBANY, NEW YORK.
ARD OF WATER SUPPLY.

SECTION NO. 1.
CONTRACT NO. 1

BASIC CREEK DAM.

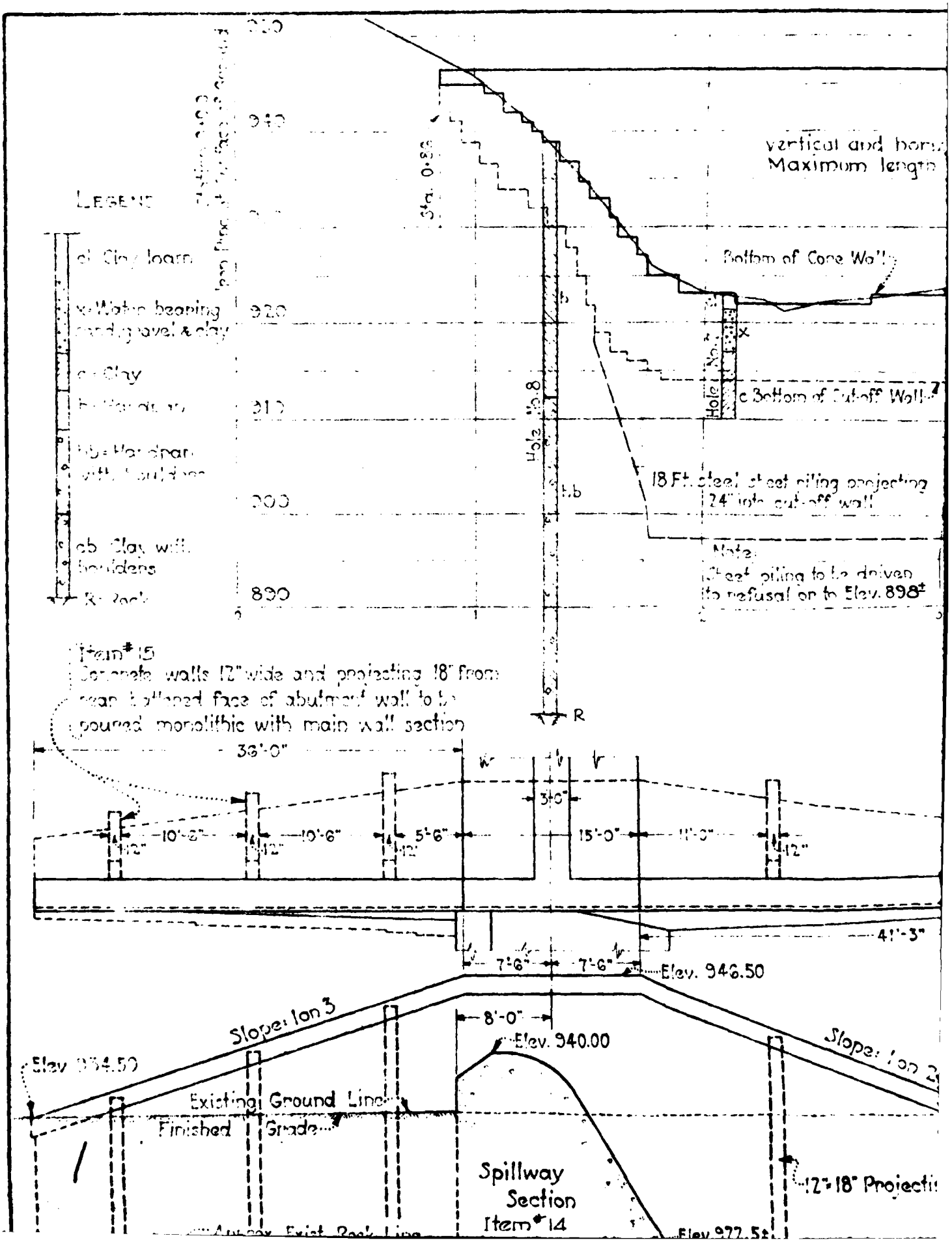
TION PLAN AND ELEVATION

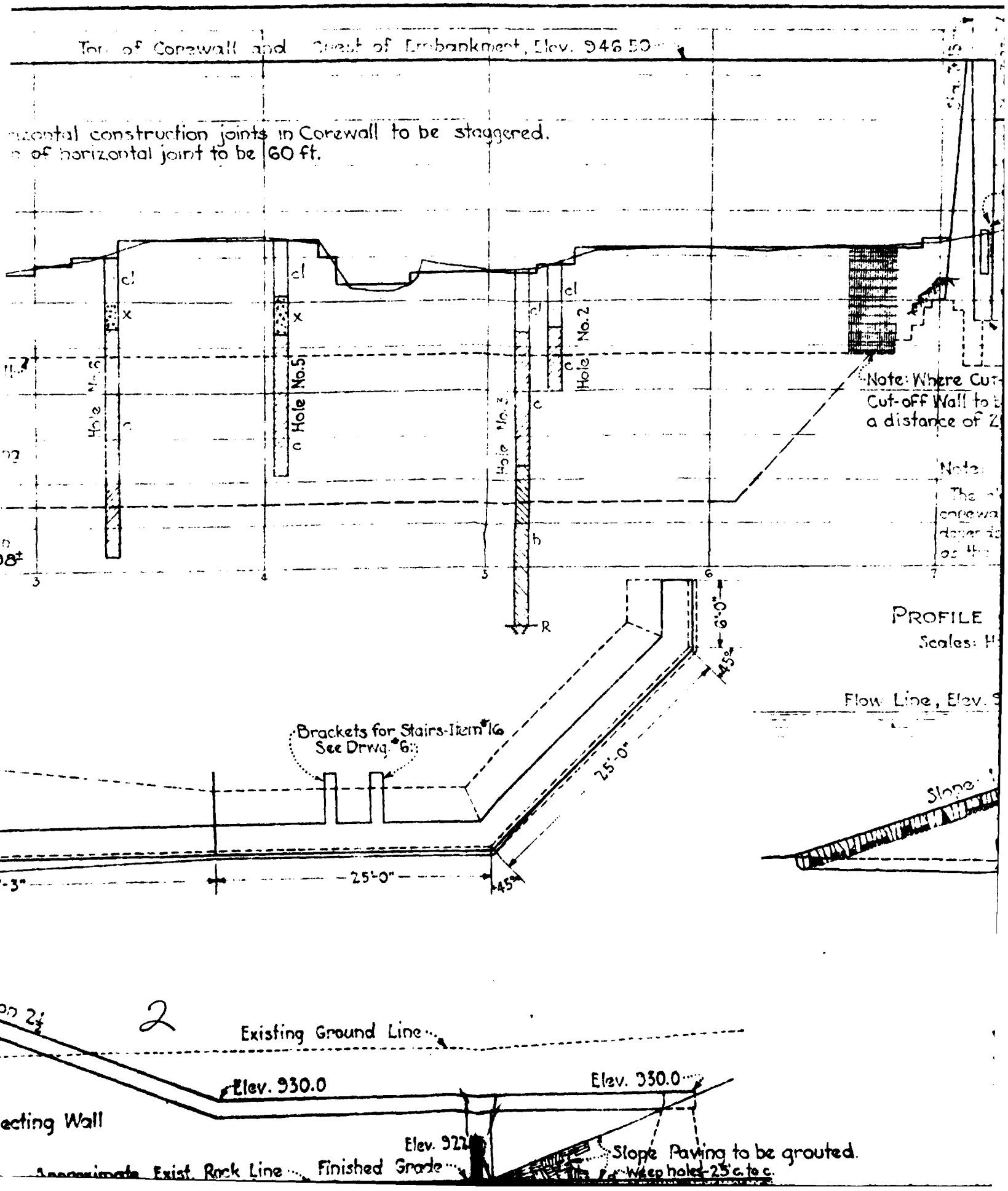
EQUARD AND SMITH

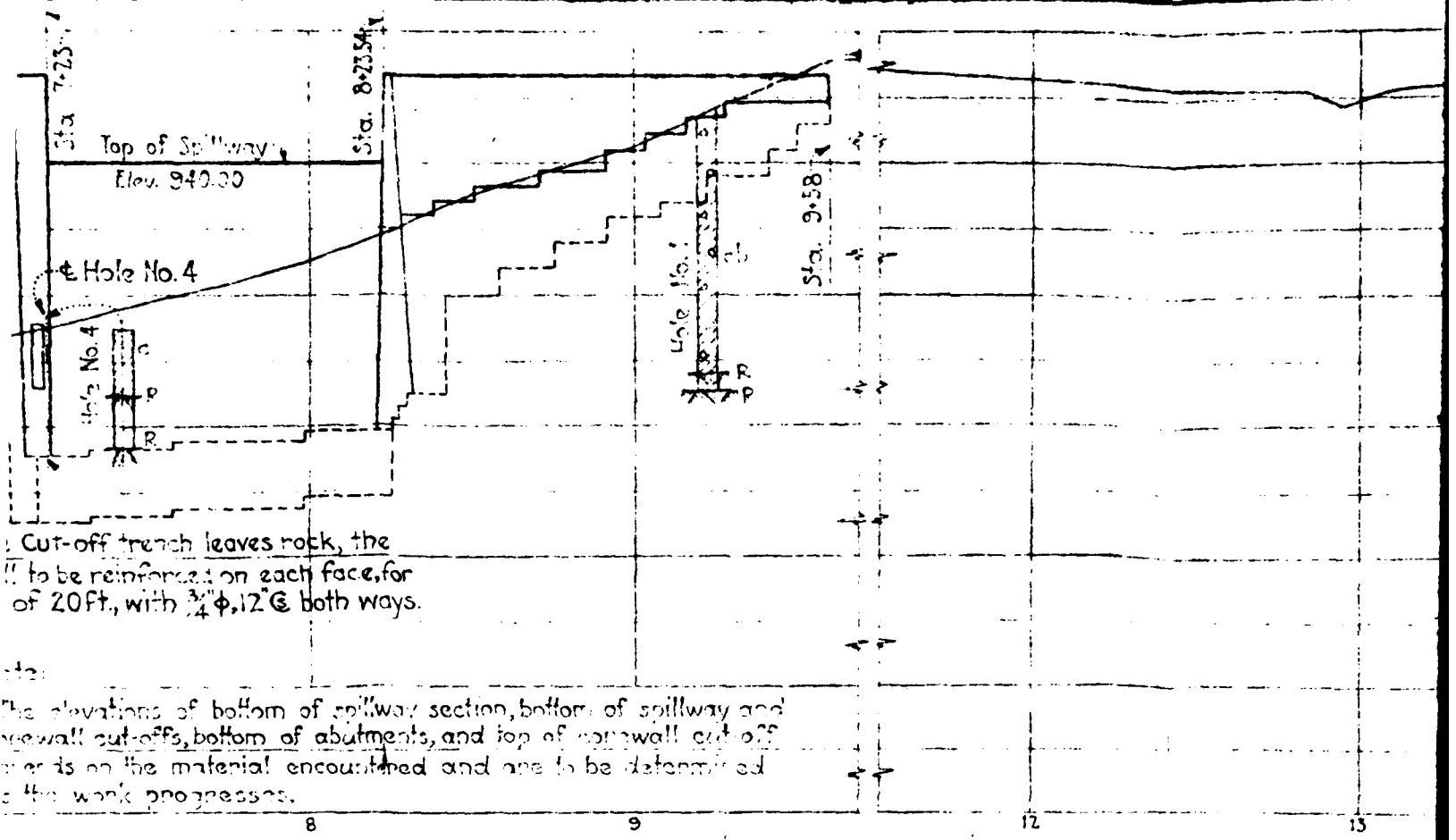
Sheet No 3.

8

3 of 6

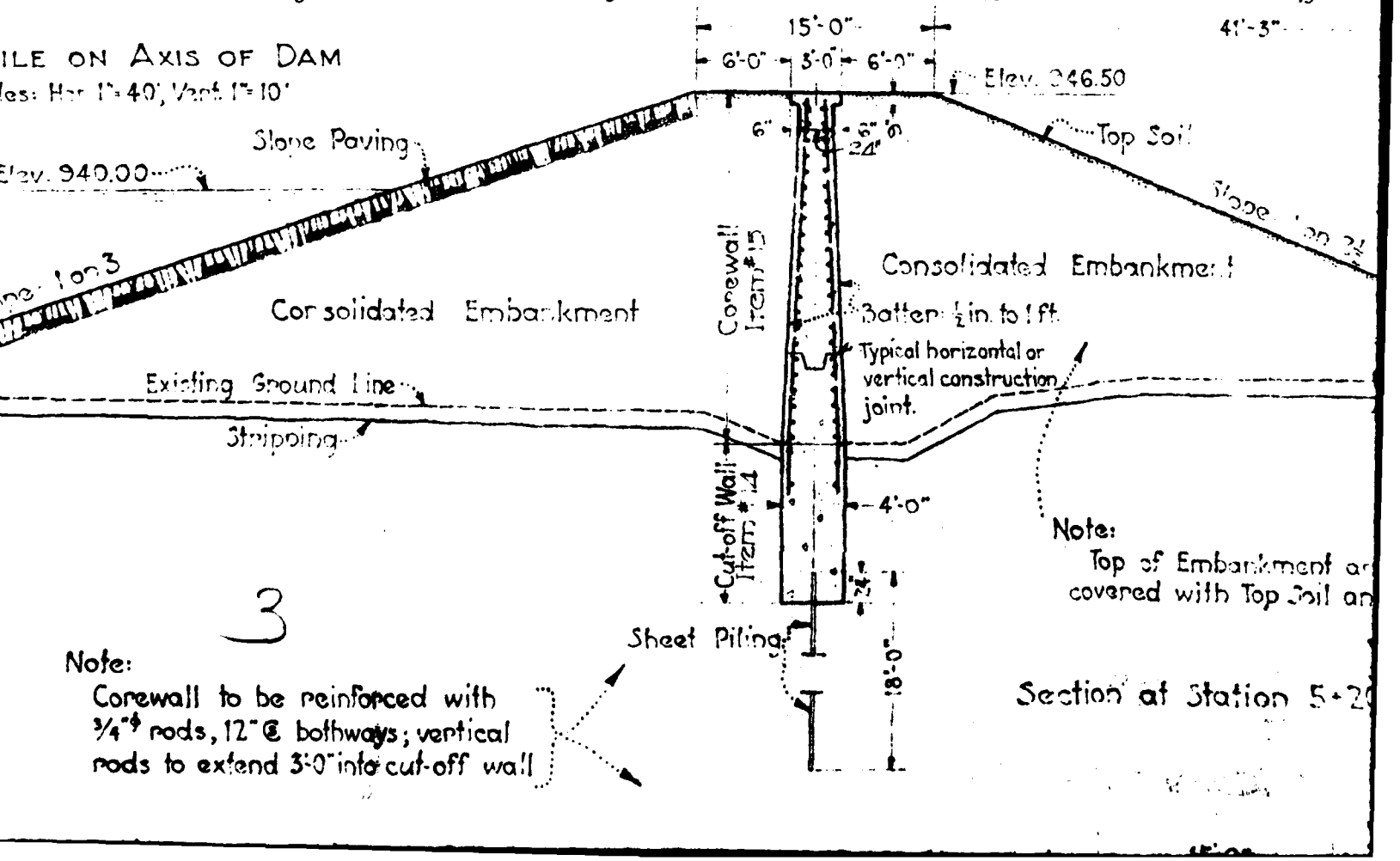

LEGEND
Bottom of Core Wall
Bottom of Cut-off Wall
18 Ft. steel sheet piling projecting 24" into cut-off wall
Note:
Sheet piling to be driven to refusal or to Elev. 898±
Item #15
Concrete walls 12" wide and projecting 18" from mean battered face of abutment wall to be poured monolithic with main wall section
36'-0"
10'-6"
10'-6"
5'-6"
3'-0"
15'-0"
11'-0"
12"
41'-3"
7'-6"
7'-6"
Elev. 946.50
Slope 1on 3
8'-0"
Elev. 940.00
Slope 1on 2
Elev 954.50
Existing Ground Line
Finished Grade
Spillway Section Item #14
12"-18" Projecti
Approx Exist Rock Line
Elev 922.5±

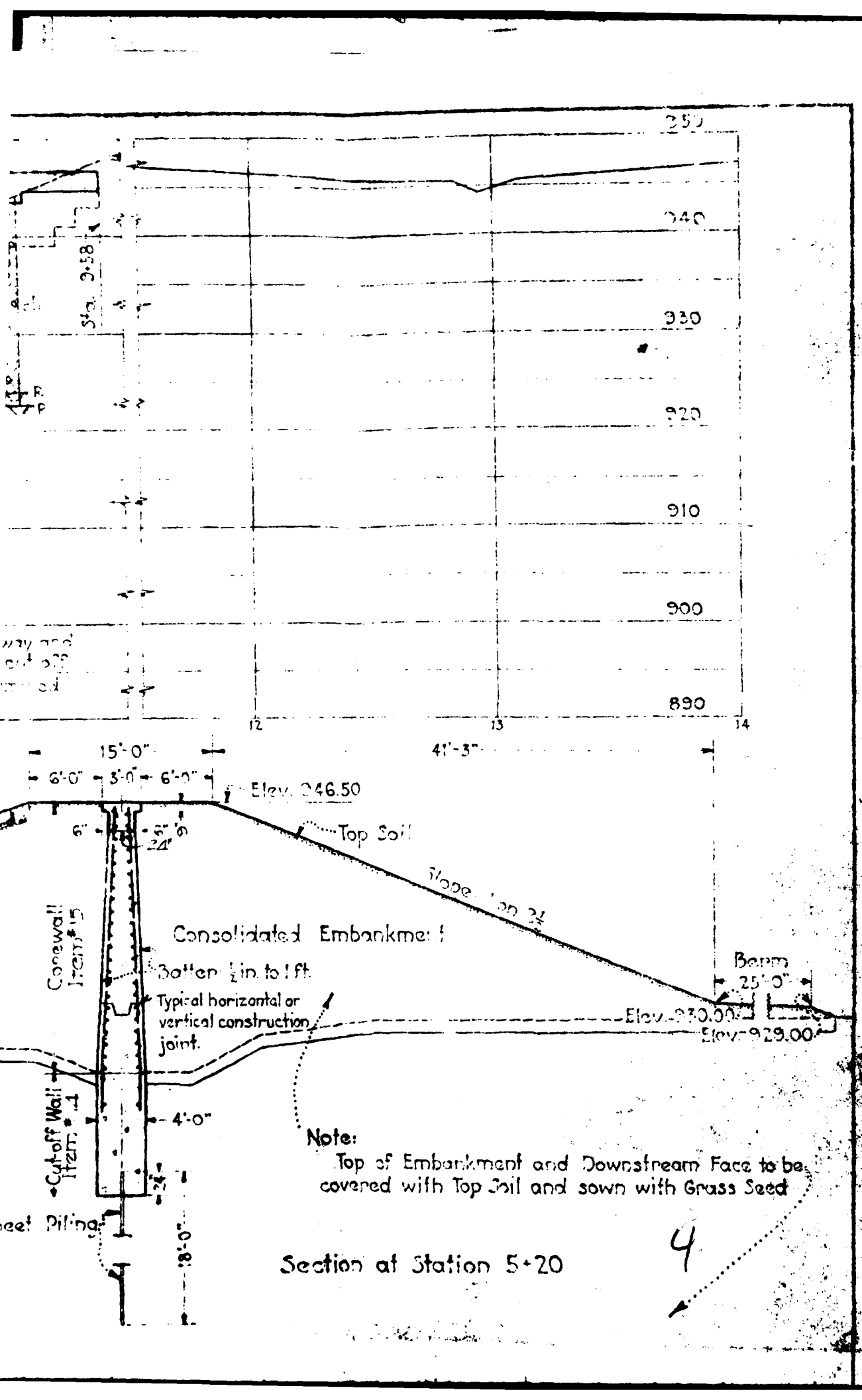

Top of Corewall and Crest of Embankment, Elev. 946.50
horizontal construction joints in Corewall to be staggered.
of horizontal joint to be 60 ft.
Hole No.5
Hole No.2
Note: Where Cut-
Cut-off Wall to
a distance of
PROFILE
Flow Line, Elev.
Brackets for Stairs-Item 16
See Drwg. 6
25'-0"
45°
6'-0"
Existing Ground Line
Elev. 930.0
Elev. 930.0
Slope Paving to be grouted.
Weep holes-25' c. to c.
Finished Grade
Approximate Exist. Rock Line

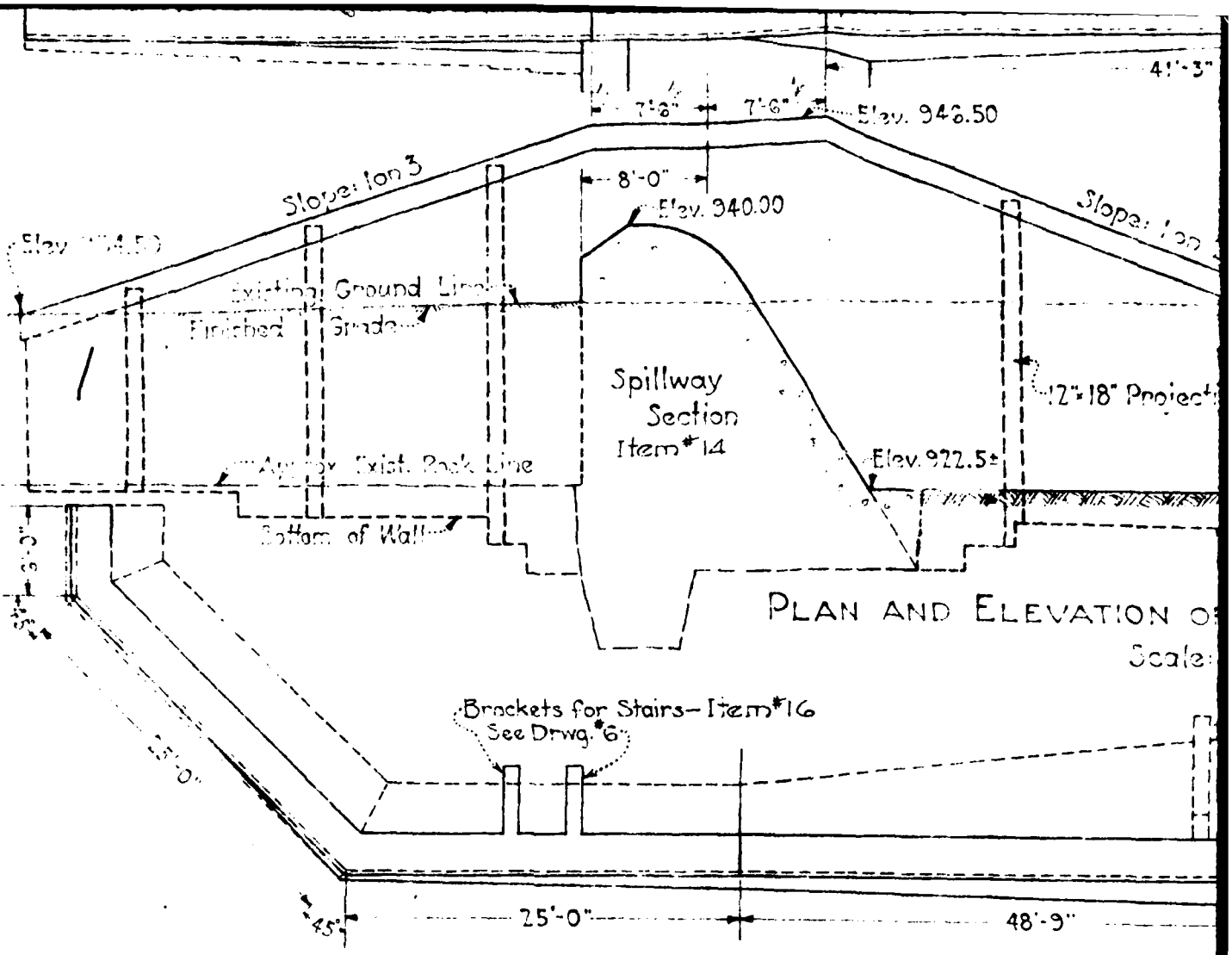


Cut-off trench leaves rock, the
" to be reinforced on each face, for
of 20 ft., with ¾"ϕ, 12"℄ both ways.

The elevations of bottom of spillway section, bottom of spillway and
corewall cut-offs, bottom of abutments, and top of corewall cut-off
are as the material encountered and are to be determined
as the work progresses.



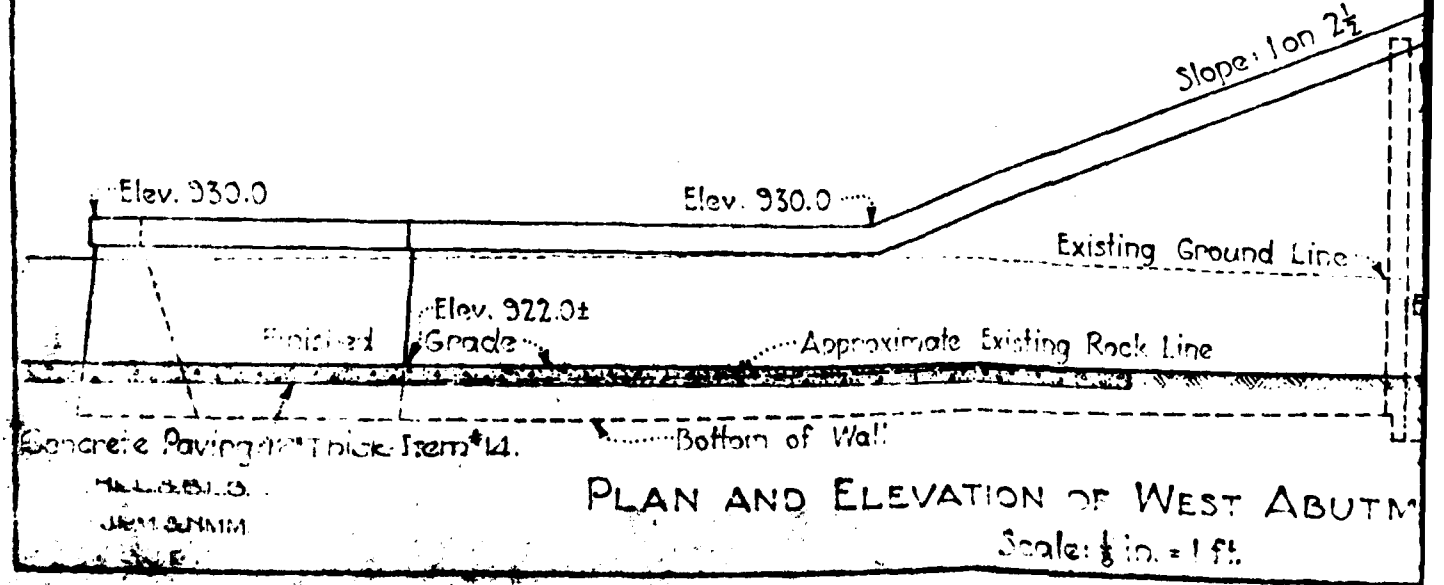

950
940
930
920
910
900
890
Sta. 3+58
12
13
14
15'-0"
41'-3"
6'-0"
3'-0"
6'-0"
Elev. 946.50
Top Soil
Slope 1on 2½
Consolidated Embankment
Batter ½in to 1 ft.
Typical horizontal or vertical construction joint.
Berm
25'-0"
Elev. 930.00
Elev. 929.00
Cutoff Wall Item #4
4'-0"
18'-0"
Note:
Top of Embankment and Downstream Face to be covered with Top Soil and sown with Grass Seed
Section at Station 5+20
4



PLAN AND ELEVATION O

Scale:

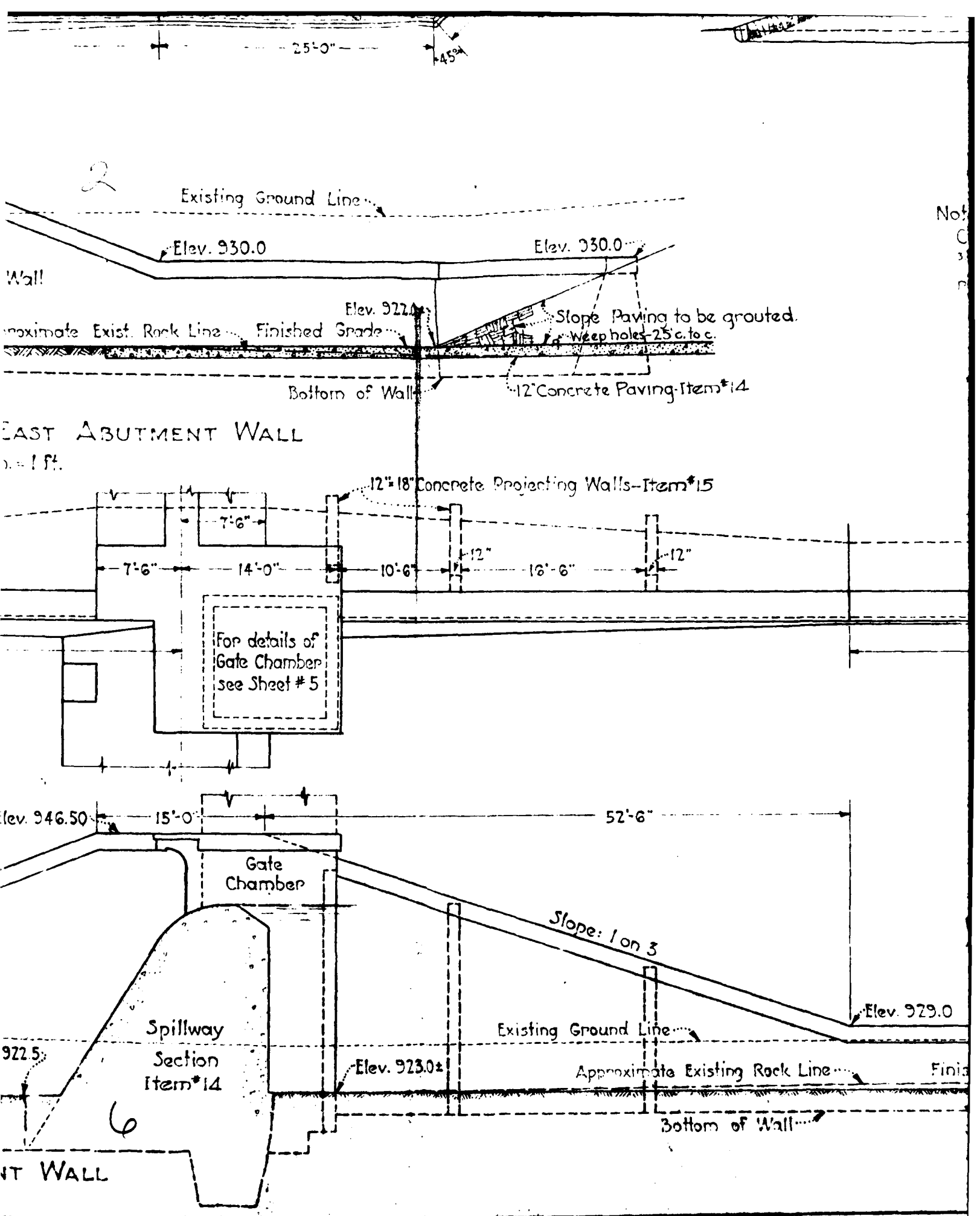
For Typical Section of Abutment Walls, see Section E-E, Sheet No. 5
Concrete in Abutment Walls-Item #14

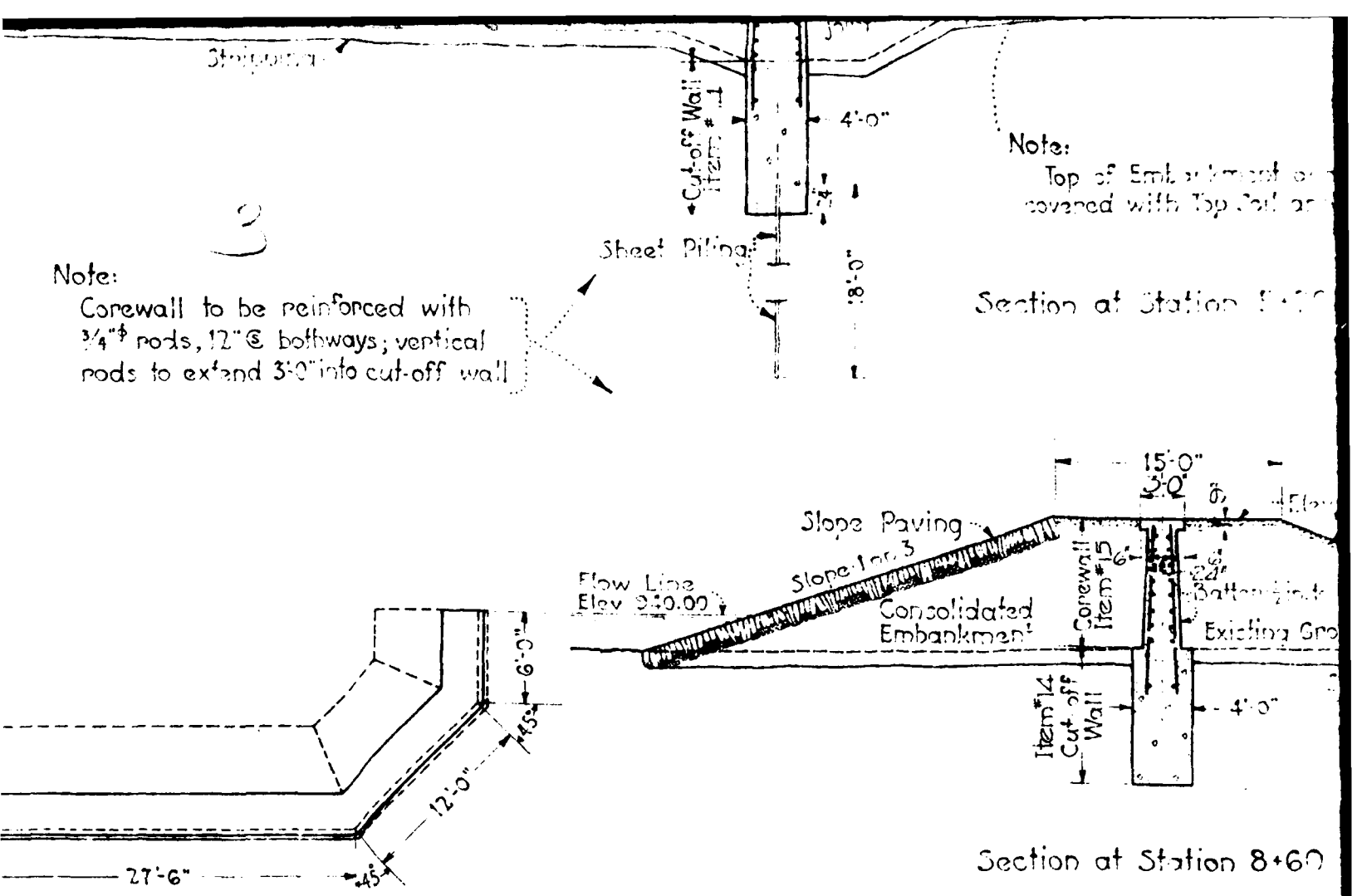


PLAN AND ELEVATION OF WEST ABUTM

Scale: ⅛ in. = 1 ft.

5


25'-0"
45°
Existing Ground Line
Elev. 930.0
Elev. 930.0
Wall
Elev. 922.0
Slope Paving to be grouted.
Weep holes-2.5' c. to c.
Finished Grade
Bottom of Wall
12" Concrete Paving-Item*14
EAST ABUTMENT WALL
12"-18" Concrete Projecting Walls-Item*15
7'-6"
7'-6"
14'-0"
10'-6"
12"
16'-6"
12"
For details of Gate Chamber see Sheet # 5
15'-0"
52'-6"
Gate Chamber
Slope: 1 on 3
Elev. 929.0
Spillway Section Item*14
Existing Ground Line
Elev. 923.0±
Approximate Existing Rock Line
Bottom of Wall
6



TYPICAL SECTIONS OF EA

Scale: 1/8 in. = 1 ft.

CITY OF ALBANY, NEW Y

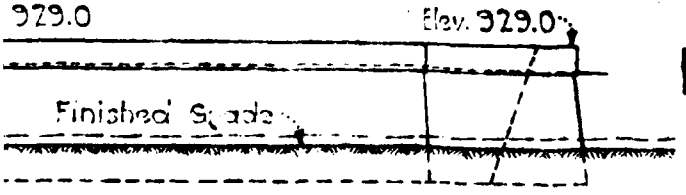
BOARD OF WATER SUP

SECTION NO. 1

CONTRACT NO 1.

BASIC CREEK DA

EARTH DAM AND ABUTMENT



WHITMAN, REQUARDT AND SMITH
Engineers

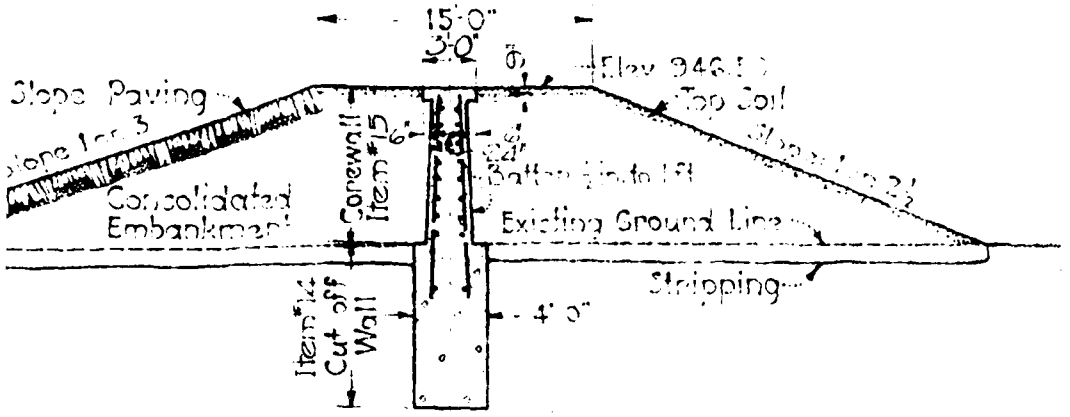
Scales as shown

Sheet No. 4.

Note:
Top of Embankment and Downstream Face to be covered with Top Soil and sown with Grass Seed

4

Section at Station 5+20



Section at Station 8+60

TYPICAL SECTIONS OF EARTH DAM
Scale: 1/8 in. = 1 ft.

OF ALBANY, NEW YORK
D OF WATER SUPPLY

SECTION NO. 1
CONTRACT NO. 1

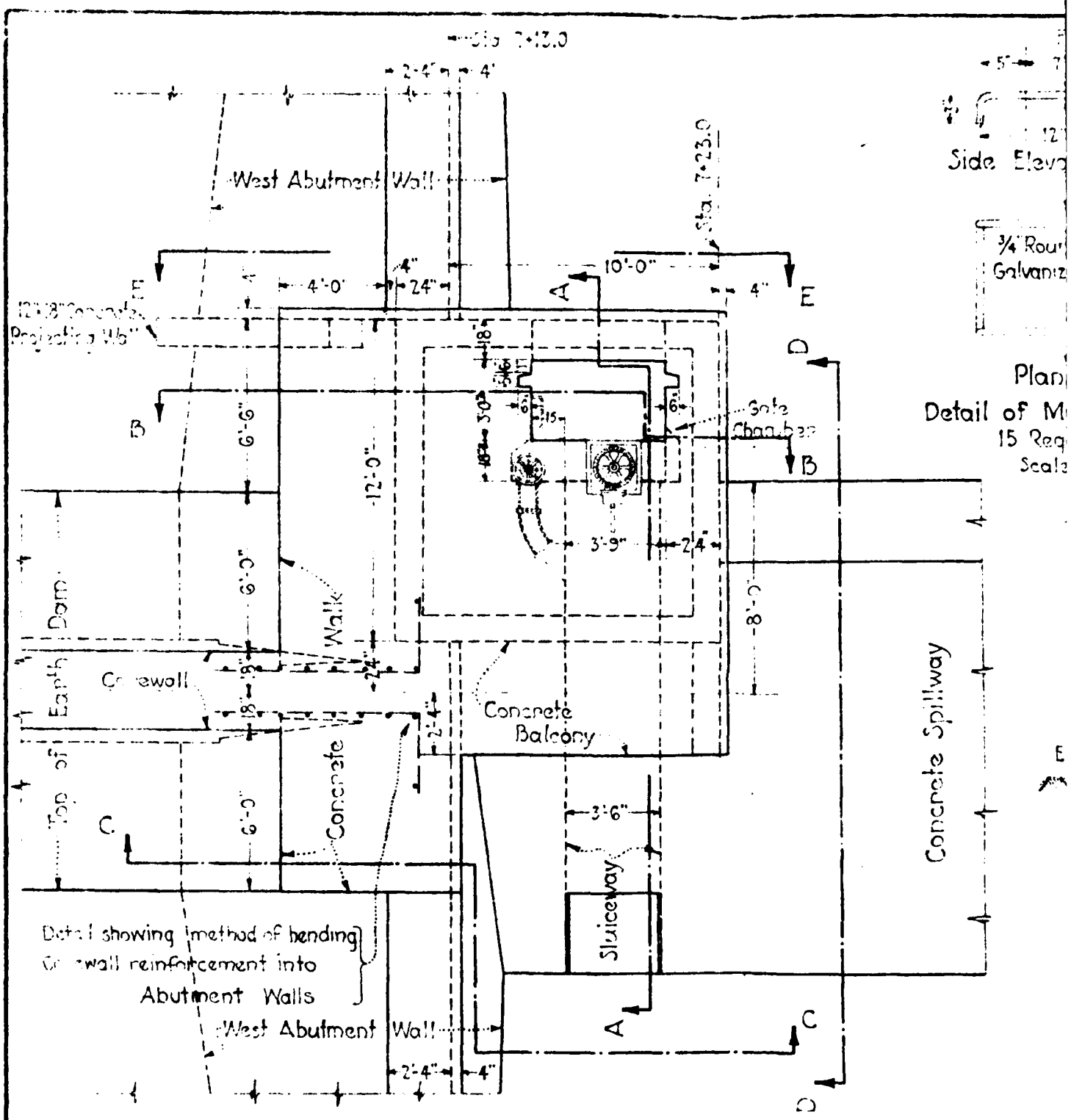
ASIC CREEK DAM

DAM AND ABUTMENT DETAILS

ARDT AND SMITH
eers
s shown

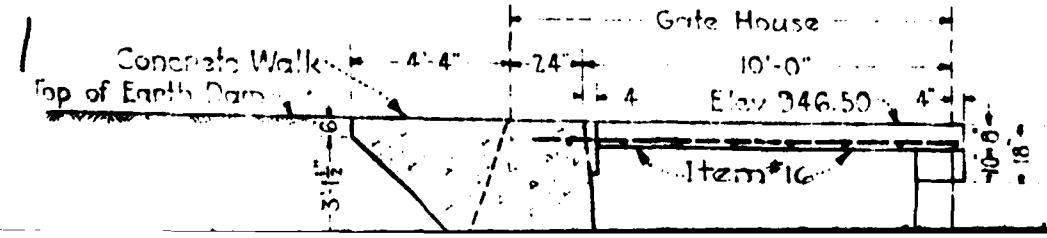
EUGENE F. HORTON
Consulting Engineer
February 23, 1923

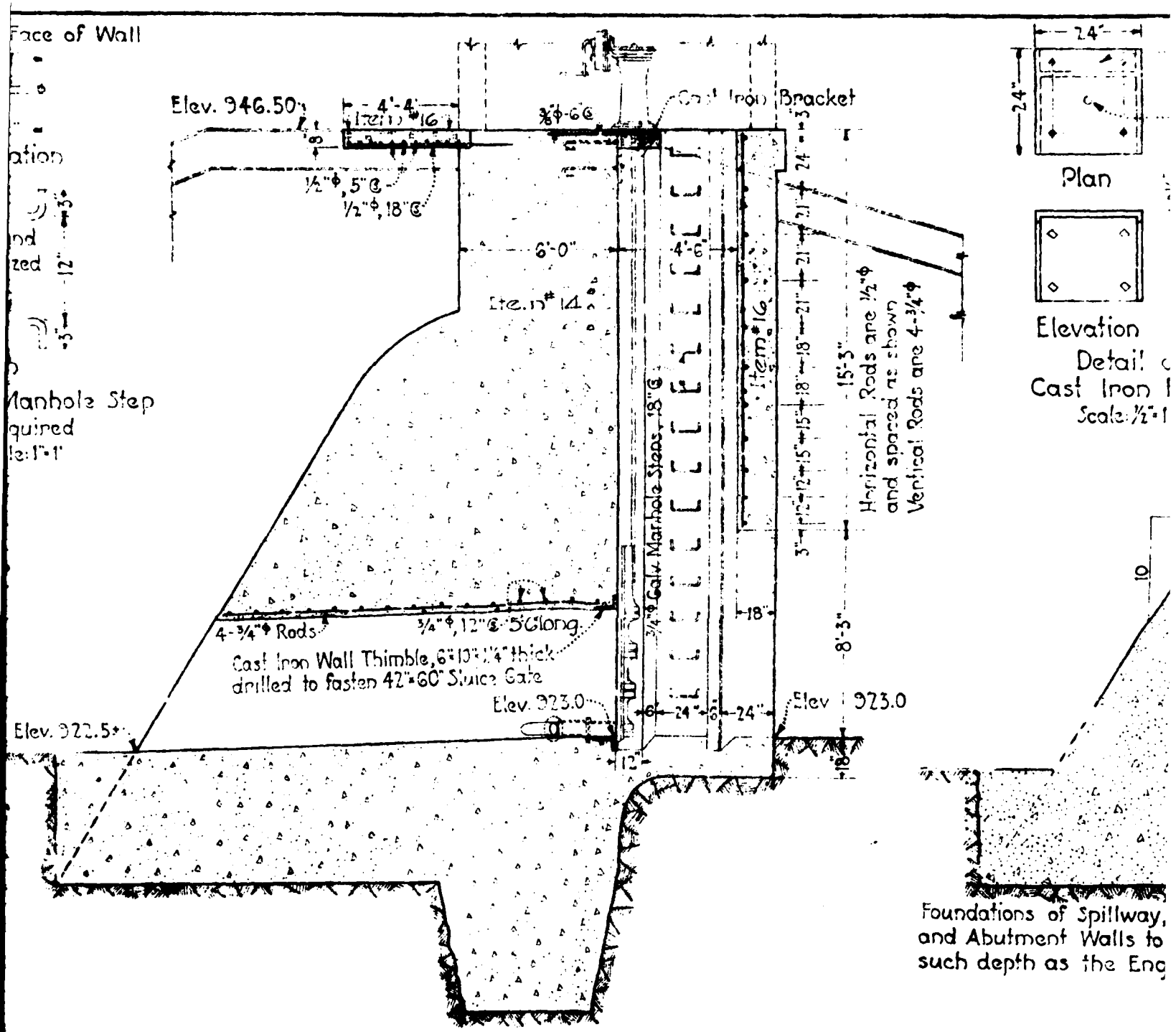
Sheet No. 4



PLAN OF GATE CHAMBER AND SLUICEWAY

Scale: $\frac{1}{4}$ in. = 1 Ft.

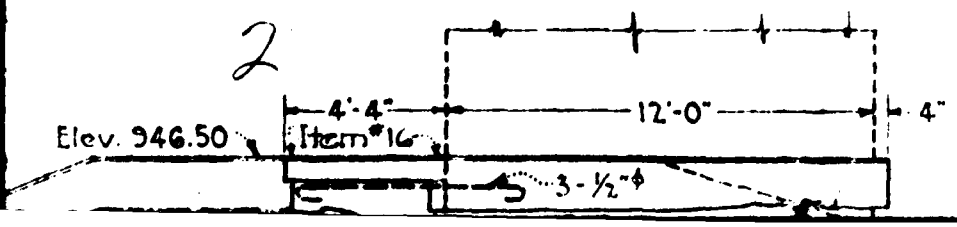


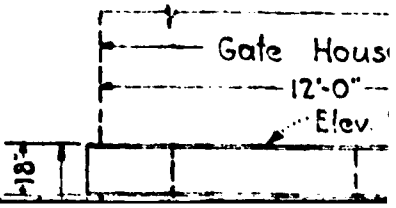


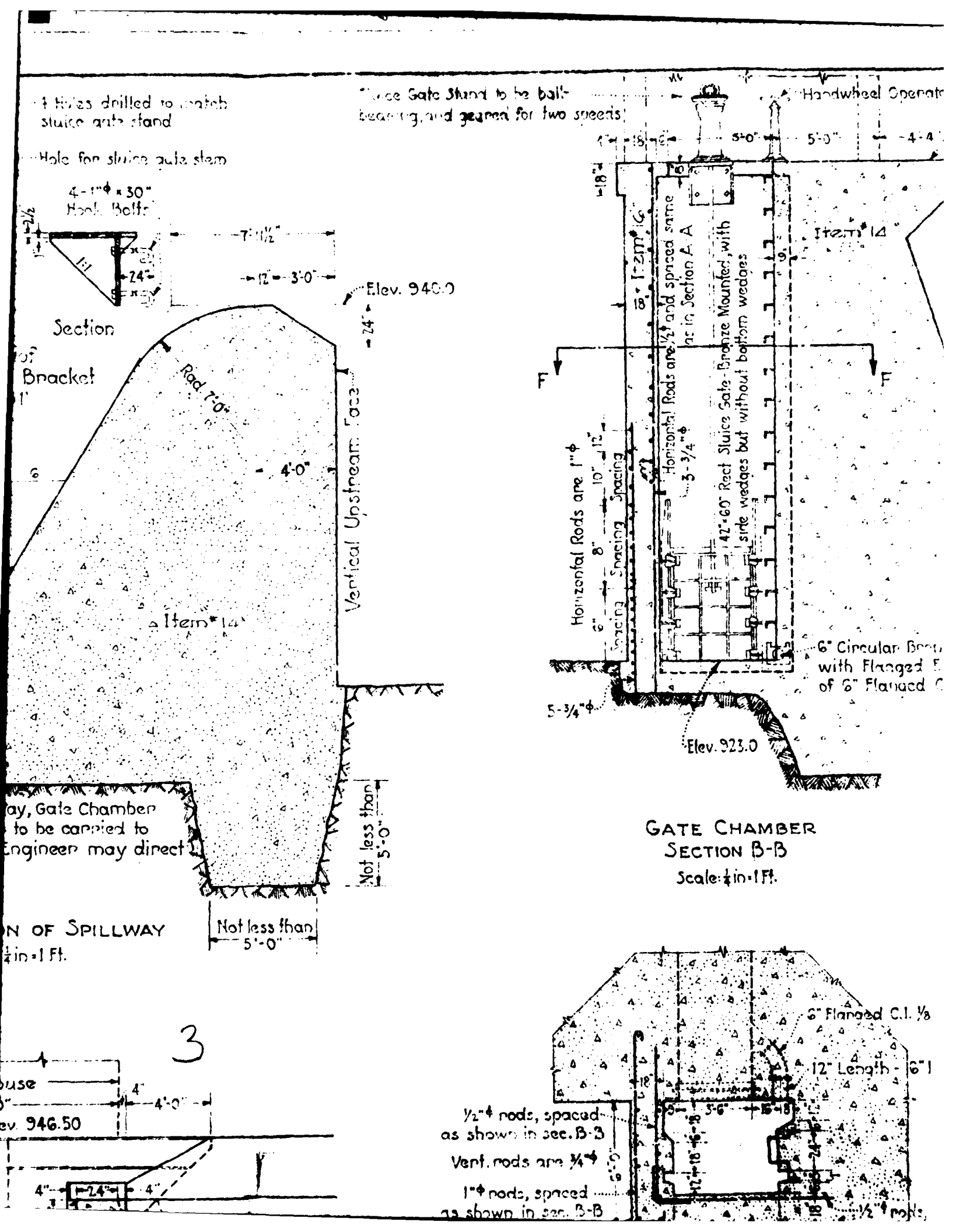
GATE CHAMBER AND SLUICEWAY
SECTION A-A
Scale: ¼ in. = 1 Ft.

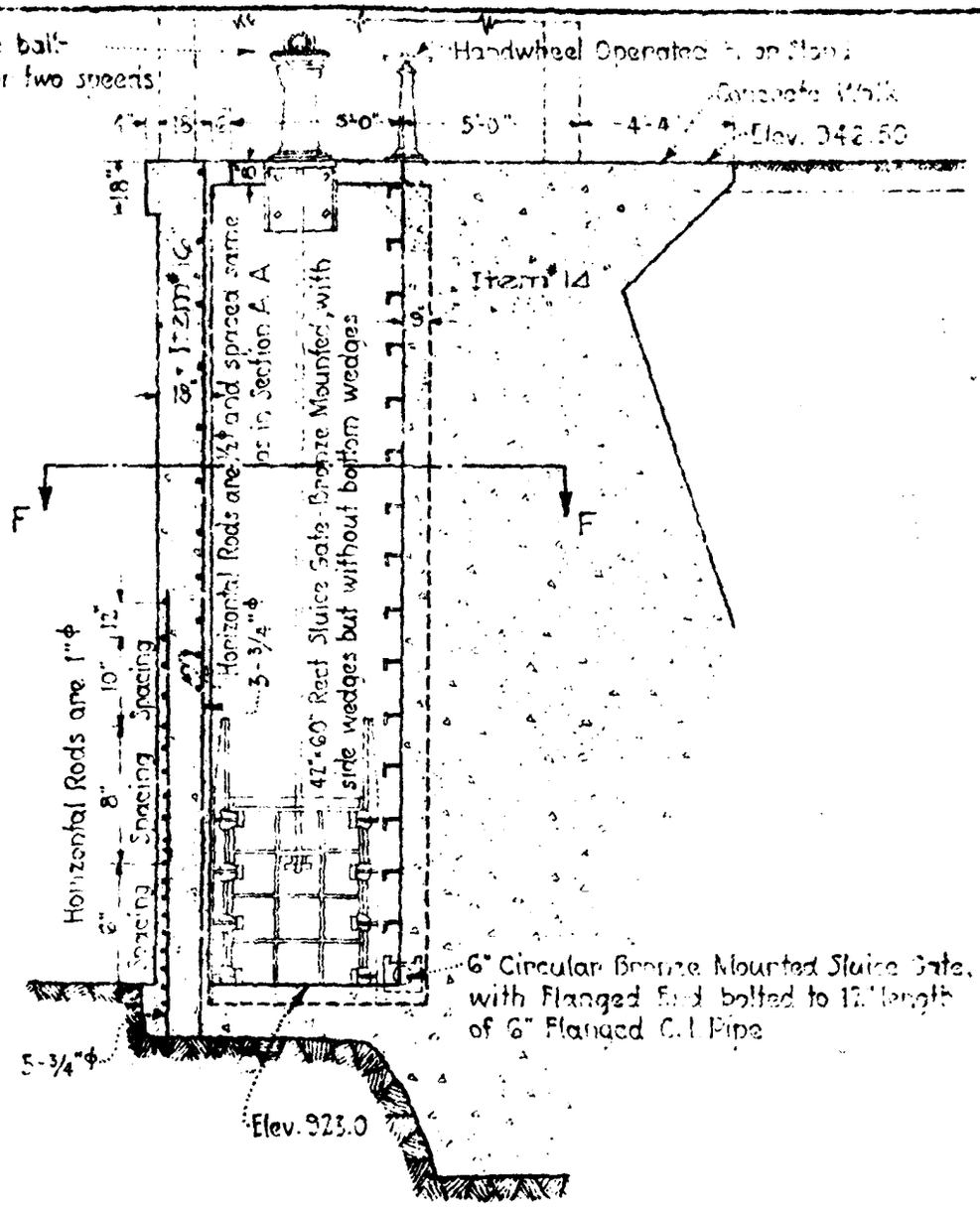
TYPICAL SECTION
Scale: ¼ in

2

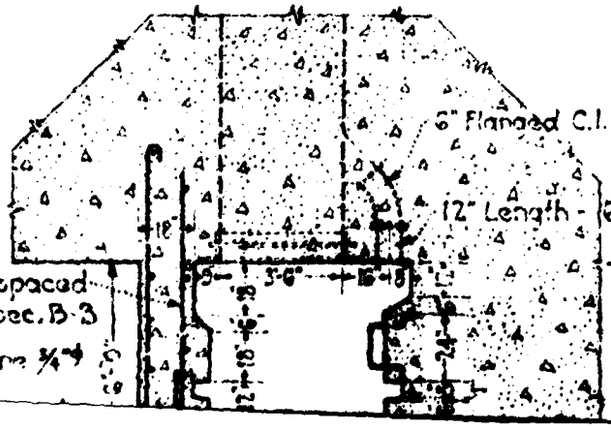





4 holes drilled to match sluice gate stand
Hole for sluice gate stem
4-1"φ x 30" Hook Bolts
7'-11½"
12"
3'-0"
24"
1:1
Section
Elev. 940.0
24"
Bracket
Rad 1'-0"
4'-0"
Vertical Upstream Face
Item* 14
Not less than 5'-0"
Not less than 5'-0"
Sluice Gate Stand to be ball-bearing, and geared for two speeds
Handwheel Operate
5'-0"
5'-0"
18"
18"
Item* 16
Item* 14
F
F
Horizontal Rods are 1"φ
8" Spacing
10" Spacing
12"
Horizontal Rods are ½"φ and spaced same as in Section A-A
3-¾"φ
42"x60" Rect Sluice Gate-Bronze Mounted, with side wedges but without bottom wedges
5-¾"φ
6" Circular
with Flanged
of 6" Flanged
Elev. 923.0
GATE CHAMBER
SECTION B-B
Scale: ¼ in = 1 Ft.
N OF SPILLWAY
¼ in = 1 Ft.
ay, Gate Chamber
to be carried to
Engineer may direct
3
use
4"
4'-0"
ev. 946.50
4"
24"
4"
6" Flanged C.I. ⅛
12" Length
6" I
½"φ rods, spaced as shown in sec. B-3
Vert. rods are ¾"φ
1"φ rods, spaced as shown in sec. B-B
½"φ rods



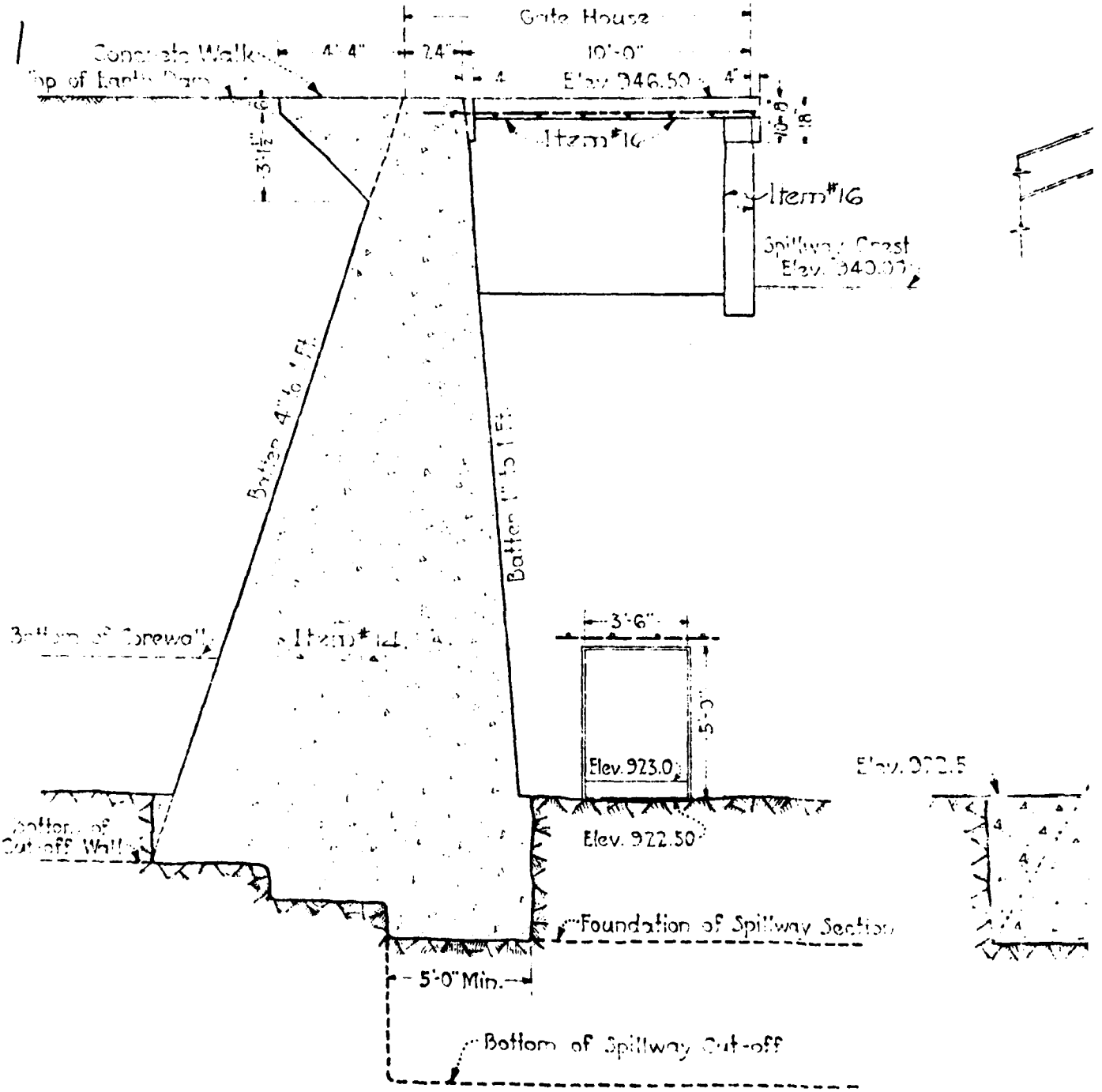
GATE CHAMBER
SECTION B-B
Scale: ¼ in. 1 Ft.



4

Plan of Gate Chamber and Sluiceway

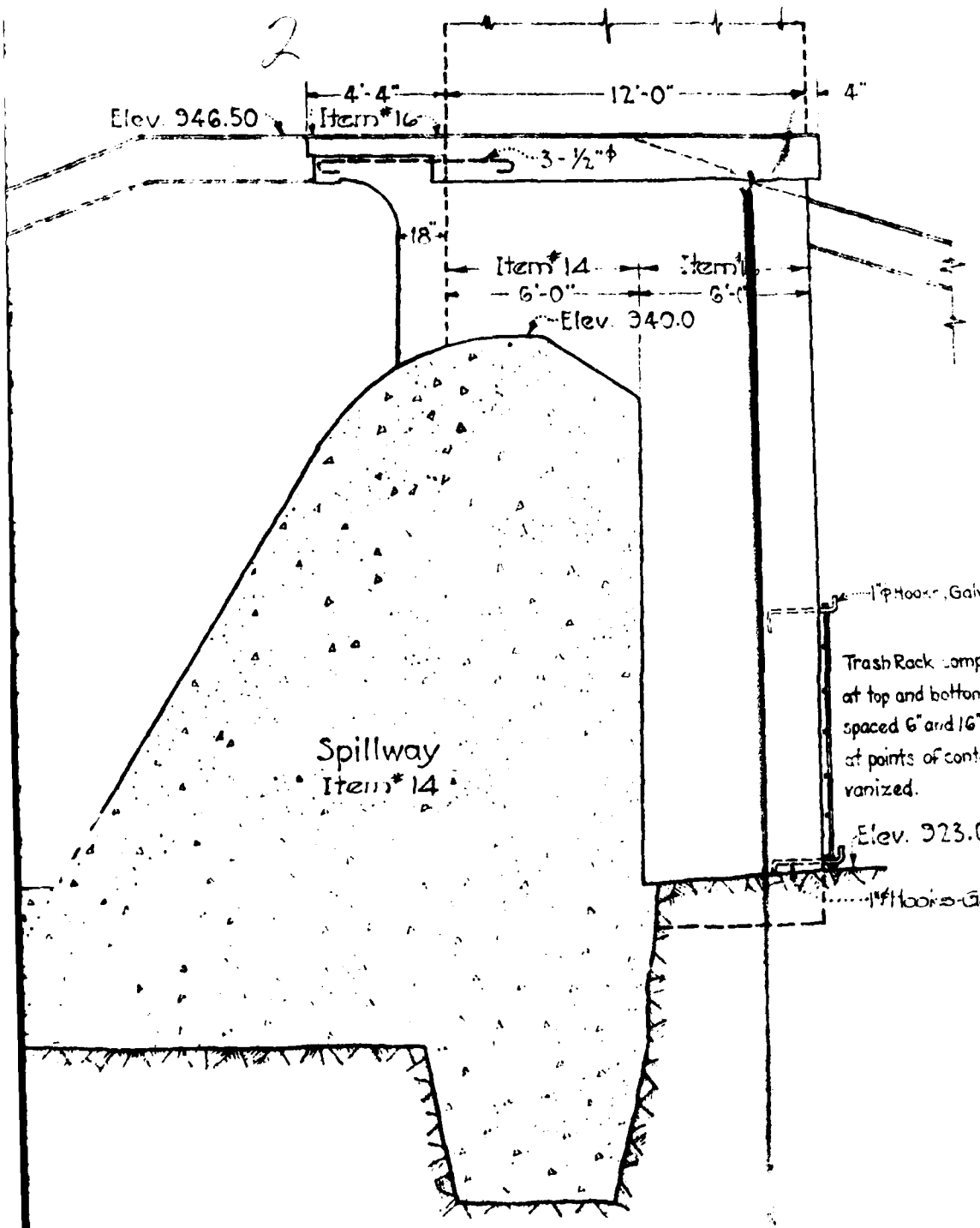
Scale: ¼ in. = 1 Ft.



Downstream Elevation of Gate Chamber and Sluiceway

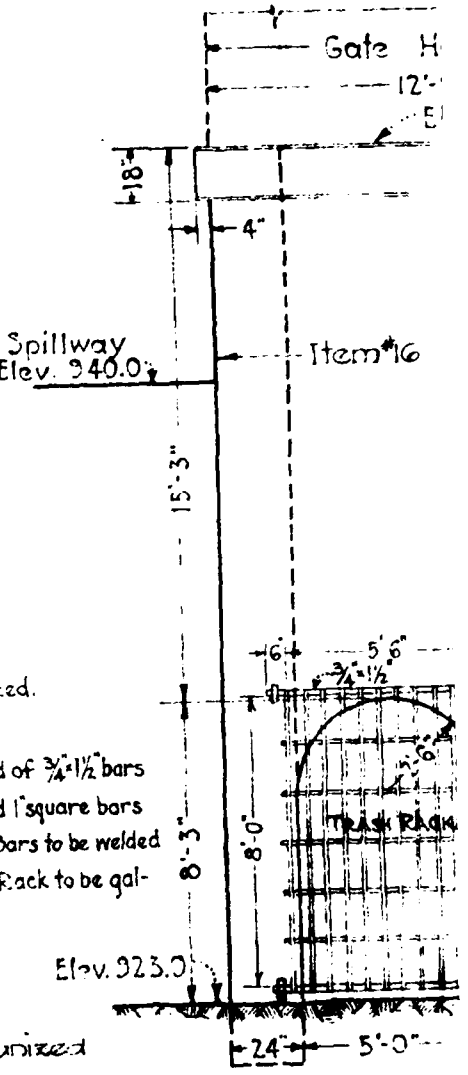
Scale: ¼ in. = 1 Ft.

Gate Chamber and Sluiceway
Section A-A
Scale: ¼ in. = 1 Ft.



Side Elevation of Gate Chamber
Section D-D
Scale: ¼ in. = 1 Ft.

Typical Secti
Scale



Sec
Showing Upstream El
and Typical Sectio
Scale

TION OF SPILLWAY
le: ¼ in = 1 Ft.

Not less than 5'-0"

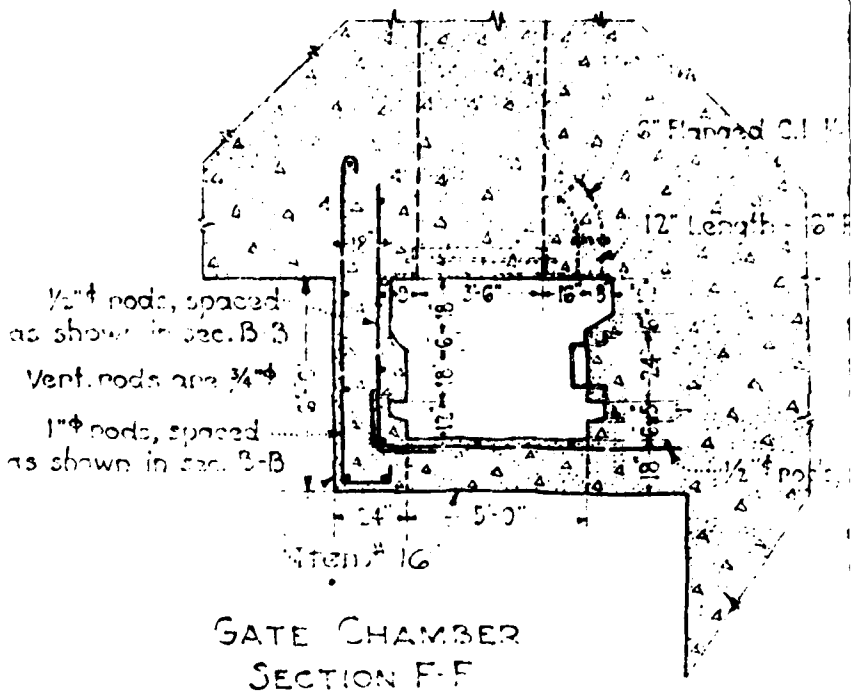
3

House
'-0"
Elev. 946.50

4"
4'-0"
4"
2.4"
18"
Item #14
Batter 1" to 1 Ft.
Batter 4" to 1 Ft.
6"
Abutment Wall
Item # 14

CTION E-E
LEVATION OF GATE CHAMBER
ON OF ABUTMENT WALLS
e: ¼ in = 1 Ft.

7



GATE CHAMBER
SECTION F-F
Scale: ¼ in = 1 Ft.

CITY OF ALBANY, NEW YC
BOARD OF WATER SUP

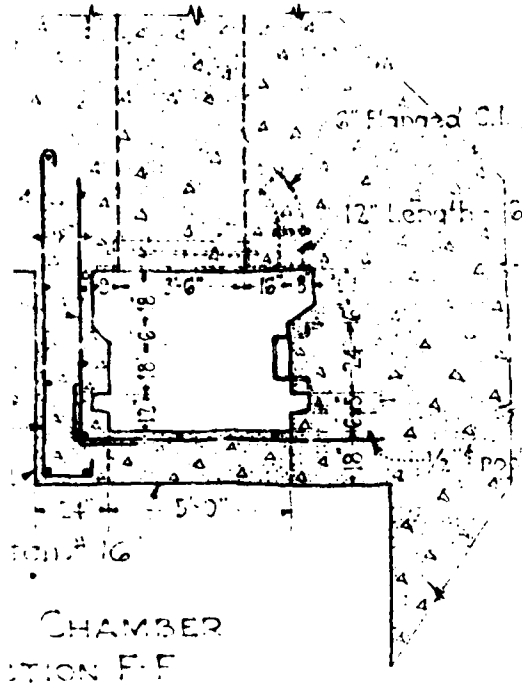
SECTION NO. 1
CONTRACT NO. 1

BASIC CREEK DAM

SPILLWAY AND GATE CH
DETAILS

WHITMAN, REQUARDT AND SMITH
Engineers
Scale 1" = 1'-0"

Sheet No 5.



CHAMBER
TION F-F

ALBANY, NEW YORK
OF WATER SUPPLY

ECTION NO. 1
ONTRACT NO. 1

C CREEK DAM

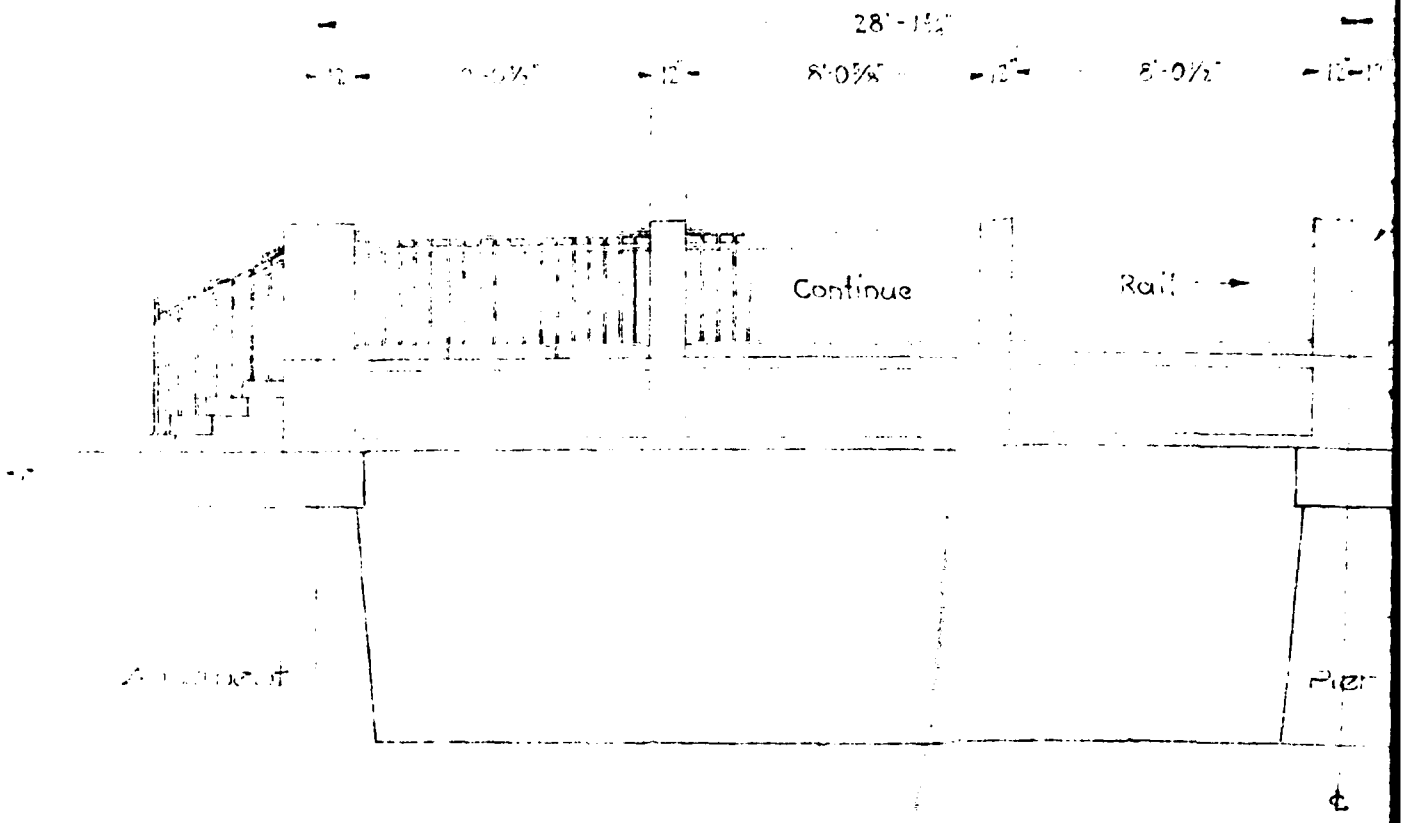
AND GATE CHAMBER
DETAILS

SMITH

February 25, 1913.

Sheet No. 5.

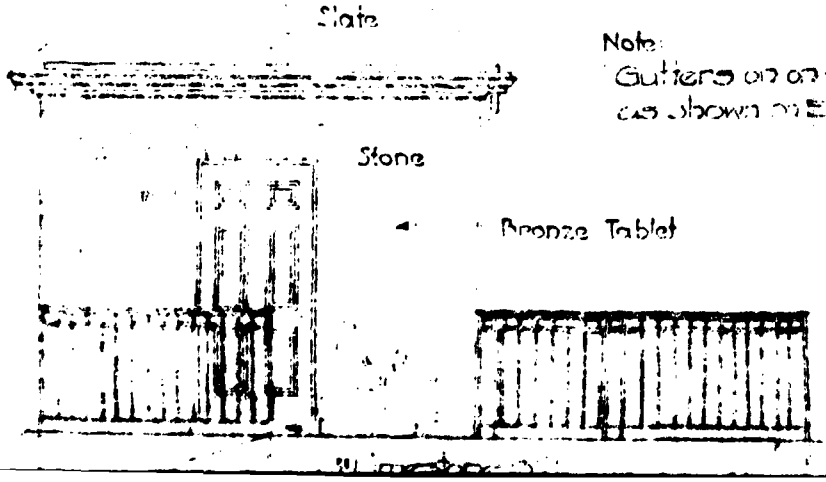
8



ELEVATION OF

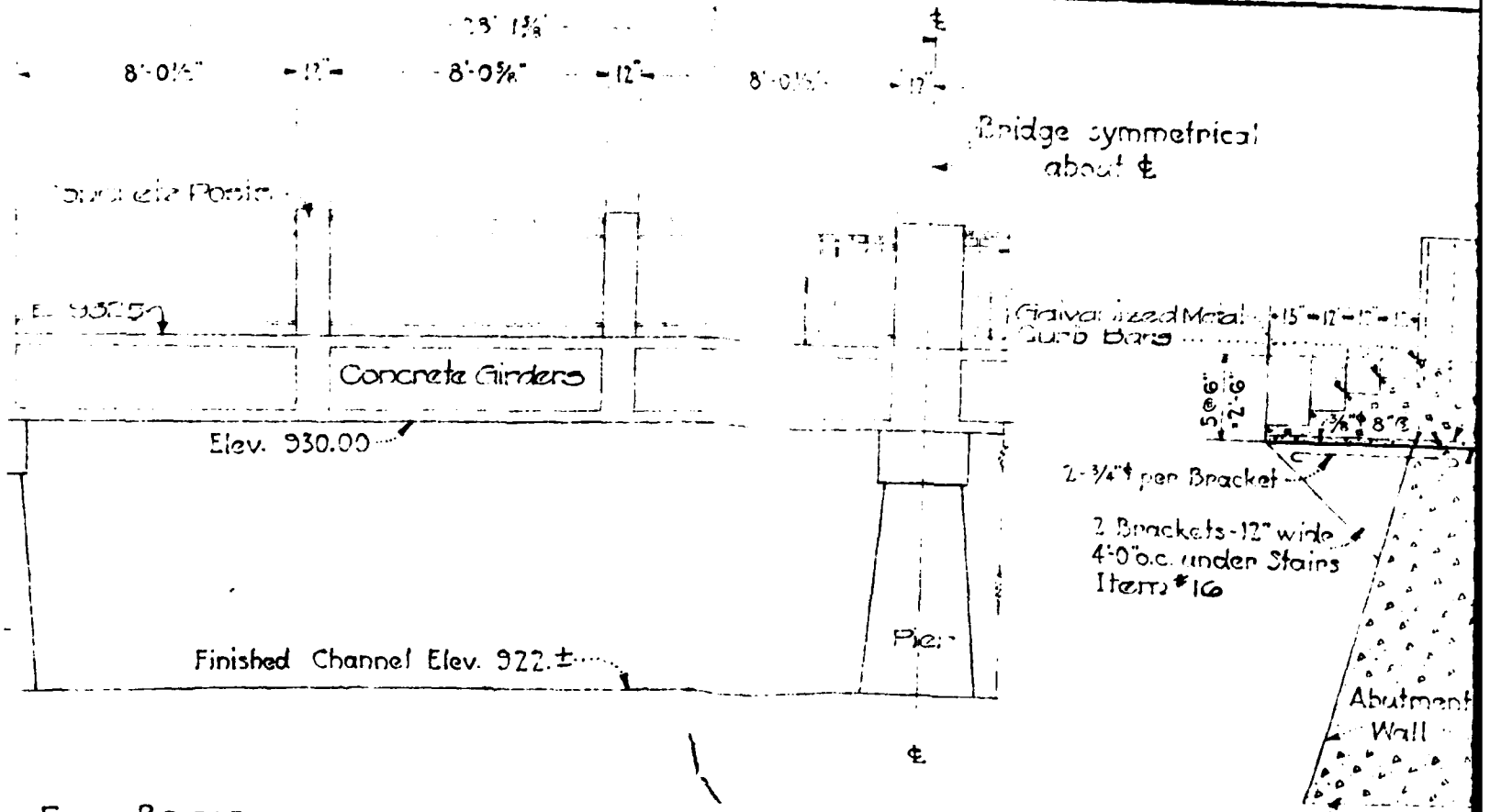
Scale:

Note: Rail same



Note:
Gutters on any two sides of Bldg
as shown on Elevations.

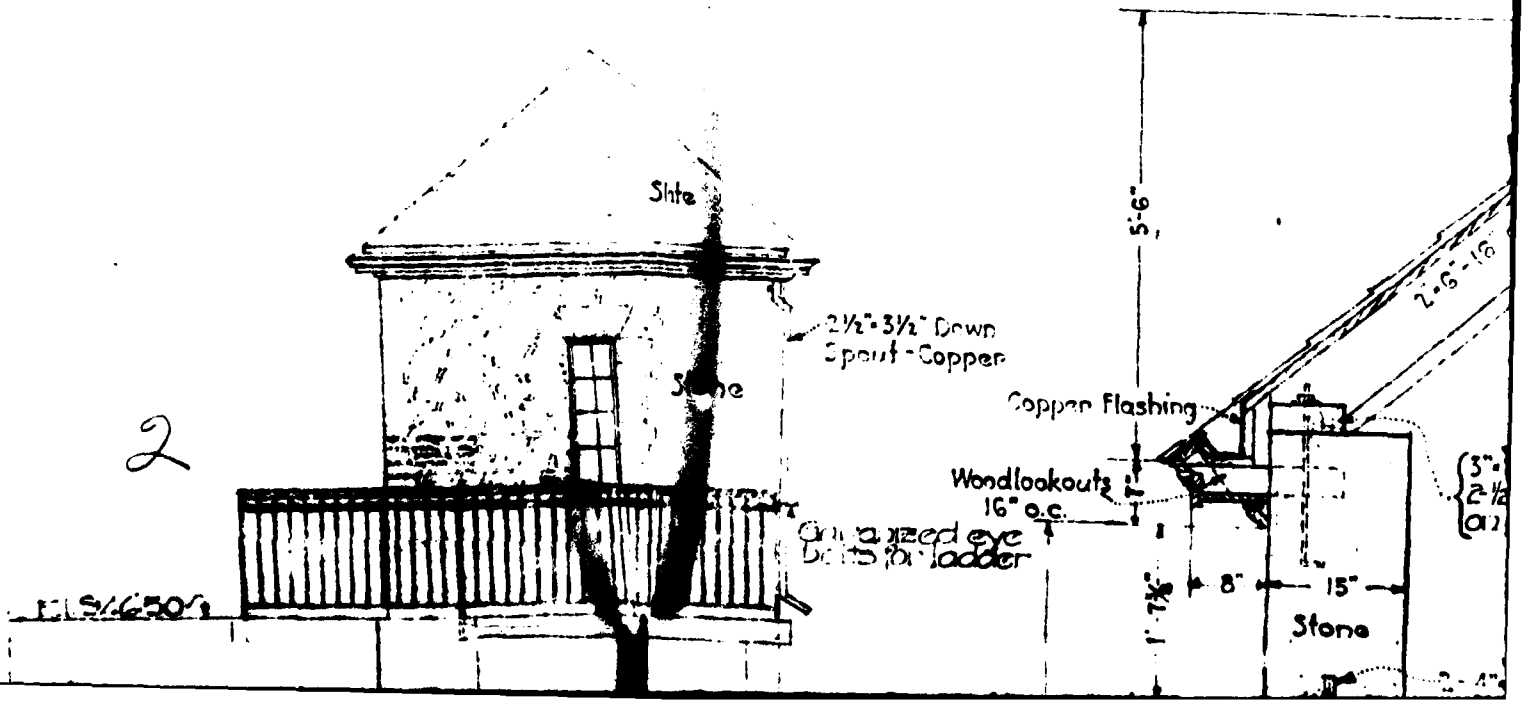
1:9.650



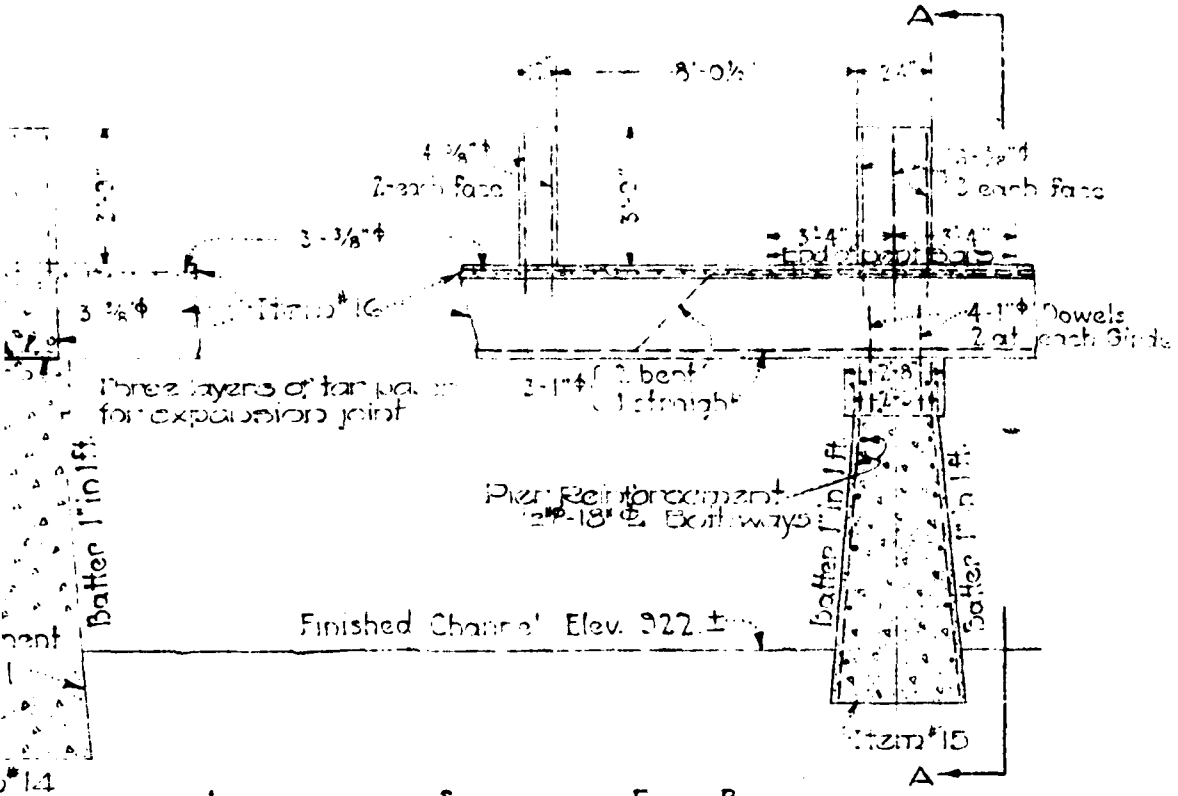
F FOOT BRIDGE

: ¼"=1'-0"

as detailed below

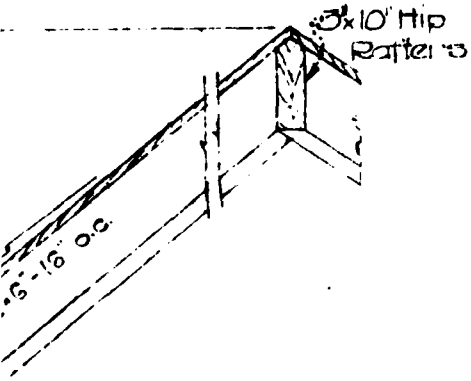


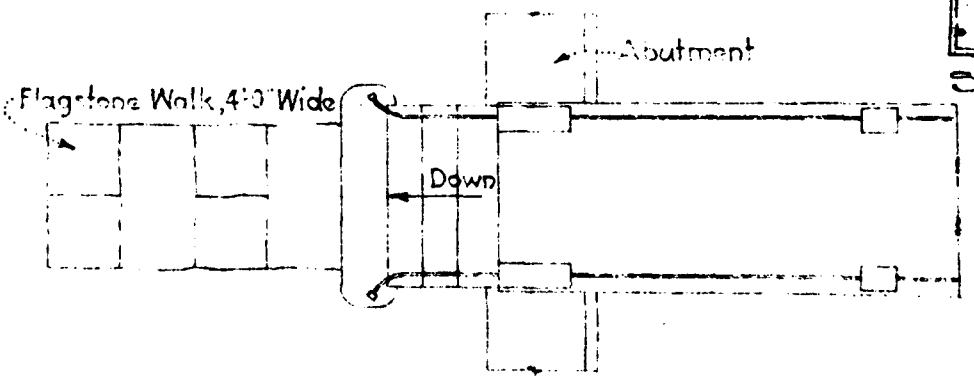
2



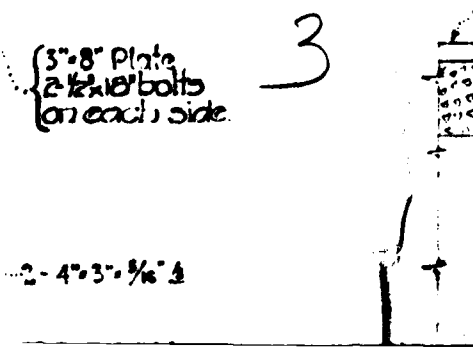
LONGITUDINAL SECTION OF FOOT BRIDGE
Scale ¼"=1'-0"

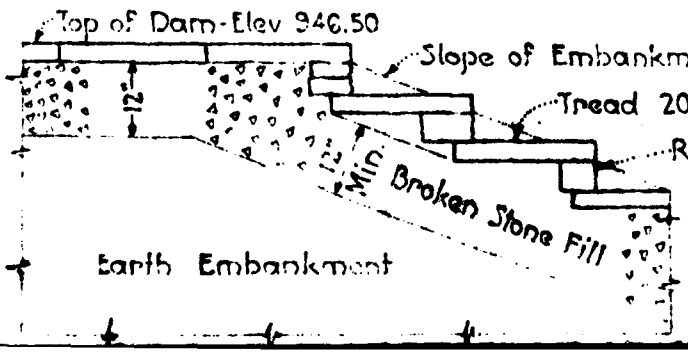
SECTION A-
Scale: ¼"=1'-

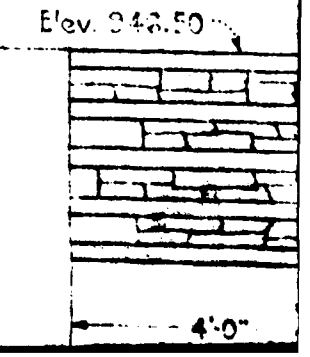


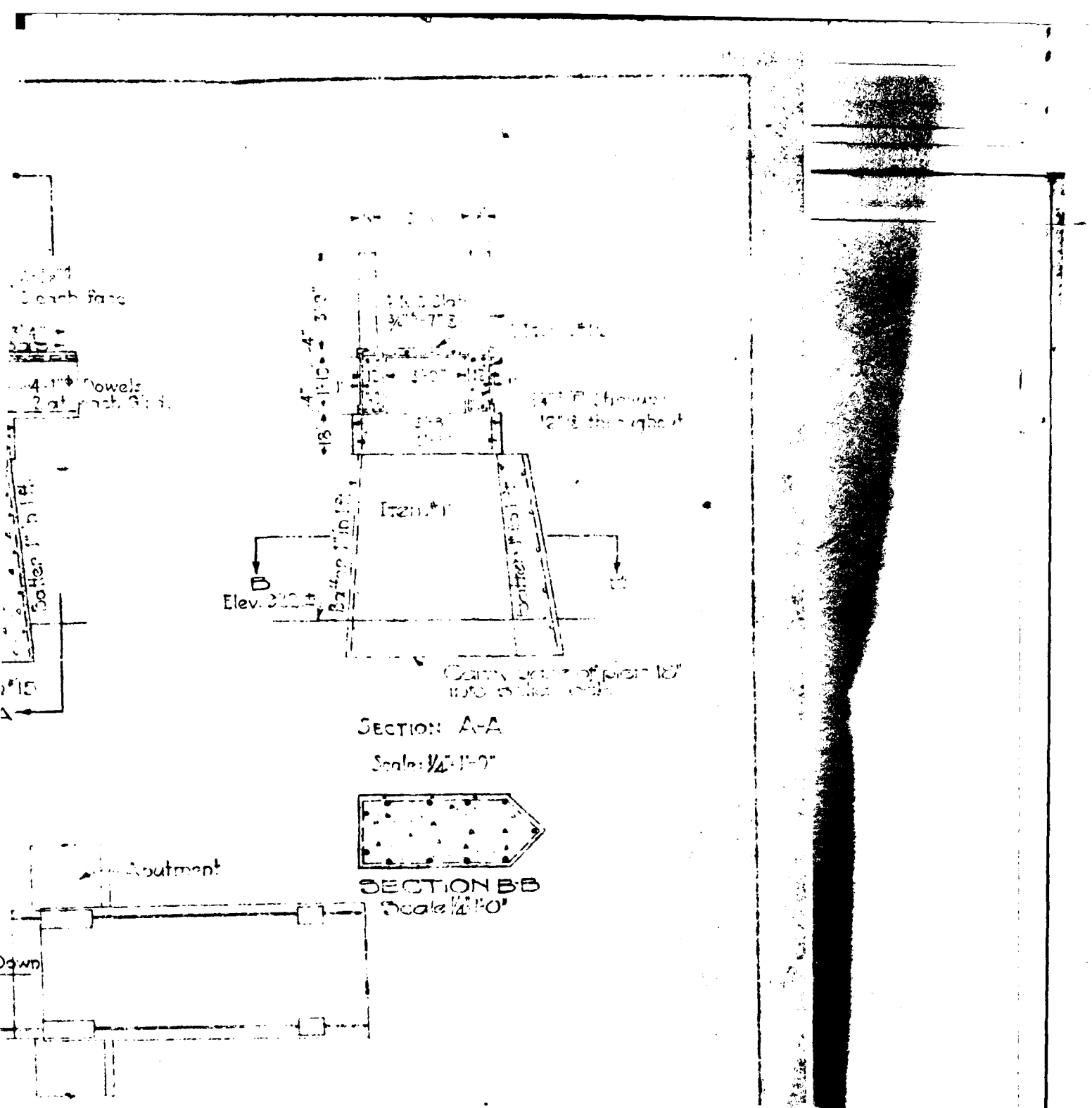


PLAN OF APPROACH TO FOOT BRIDGE
Scale: ¼"=1'-0"

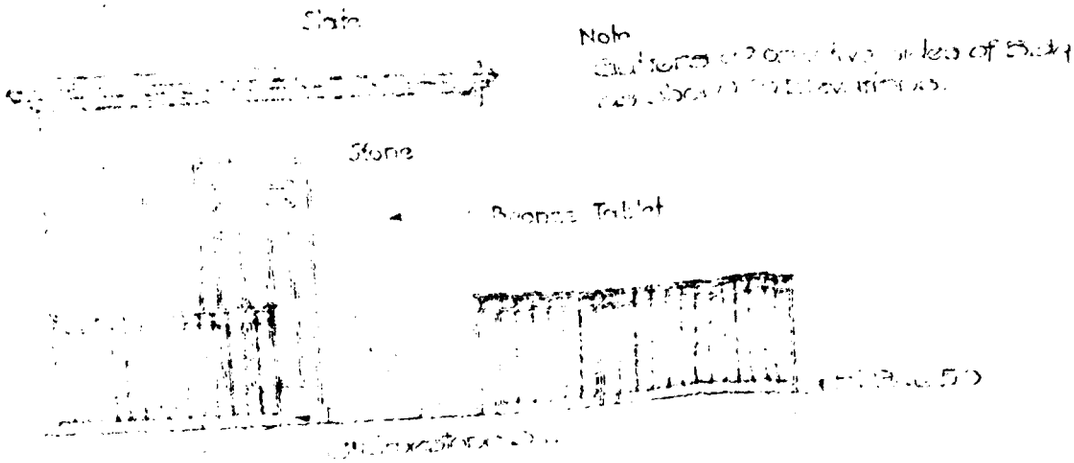




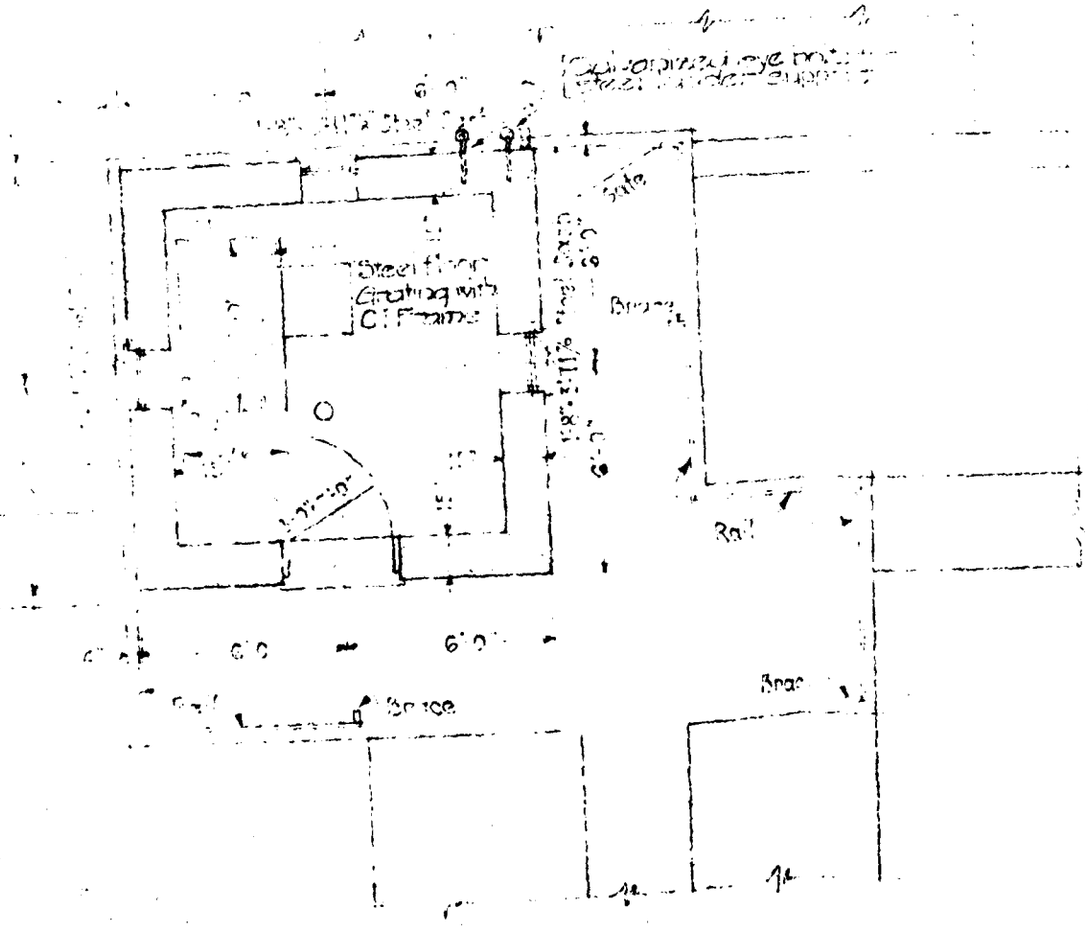



B
Elev.
SECTION A-A
Scale: 1/4"=1'-0"
SECTION B-B
Scale 1/4"=1'-0"
Abutment
APPROACH TO FOOT BRIDGE
Scale: 1/4"=1'-0"
Elev. 248.50
Tread 20"
Riser 8"
Stone Fill
4'-0"

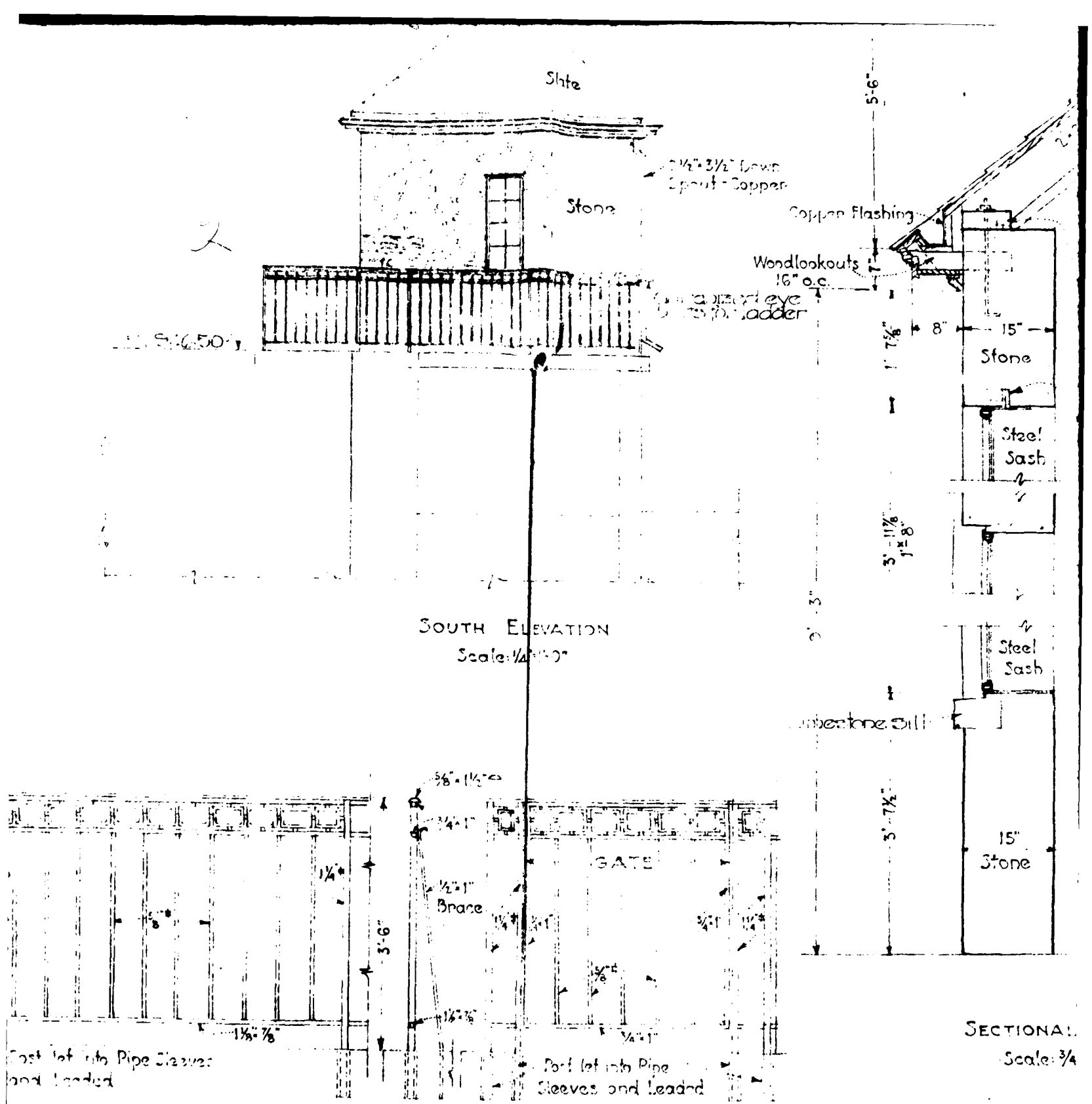
4



WEST ELEVATION
Scale: ¼"=1'-0"



PLAN OF GATE HOUSE
Scale: ½"=1'-0"

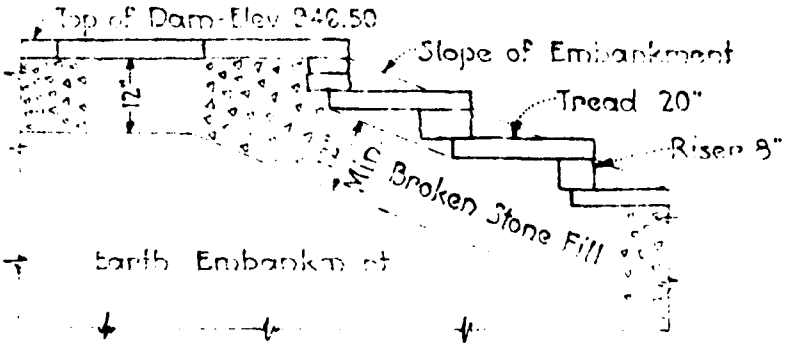


SOUTH ELEVATION
Scale: 1/4"=1'-0"

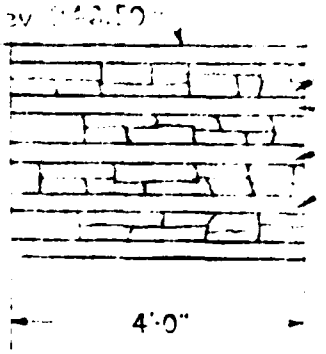
SECTIONAL
Scale: 3/4

DETAIL OF RAIL
Scale: 3/4"=1'-0"

PLAN OF APPROACH TO FOOT BRIDGE
Scale ¼"=1'-0"



TYPICAL SECTION OF FLAGSTONE STEPS
Scale: ½"=1'-0"



ELEVATION OF FLAGSTONE STEPS
Scale: ½"=1'-0"

CITY OF ALBANY, NEW YORK
BOARD OF WATER SUPPLY

SECTION NO 1
CONTRACT NO 1

BASIC CREEK DAM
GATE HOUSE AND FOOT BRIDGE
DETAILS

WHITMAN REQUARDT AND SMITH
ENGINEERS

ALBERT F. HOUSTON
CONSULTING ENGINEER

DRAWING NO 6

February 25, 19

DACH TO FOOT BRIDGE

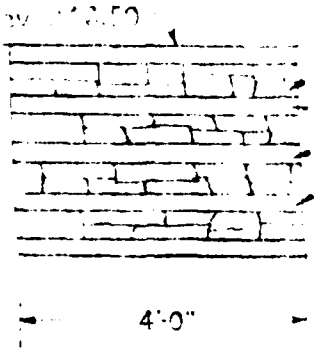
...ankment

Spread 20"

...Riser 8"

Fill

STEPS



ELEVATION OF FLAGSTONE STEPS

4

ALBANY, NEW YORK

OF WATER SUPPLY

SECTION NO 1

CONTRACT NO 1

SIC CREEK DAM

USE AND FOOT BRIDGE

DETAILS

...ND SMITH

...own

...ENGINEER ...EDITION

...Feb... 25, 19...

8

Sheet No. 6

END

DATE
FILMED

11-81

DTIC